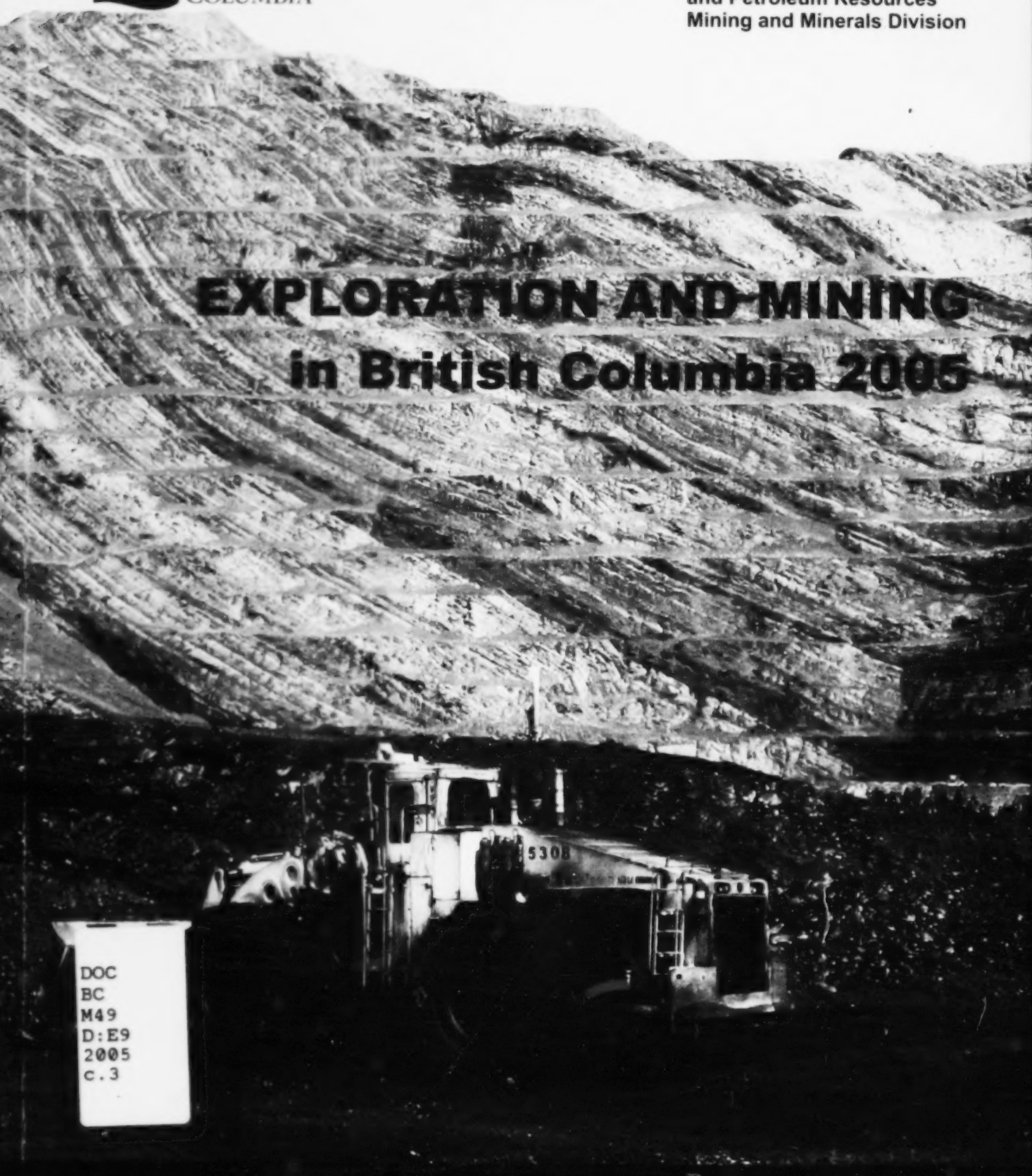
BRITISH COLUMBIA

Ministry of Energy, Mines
and Petroleum Resources
Mining and Minerals Division

# EXPLORATION AND MINING in British Columbia 2005

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Front Cover:
Elk Valley Coal Corporation operations at the Line Creek coal mine in southeastern British Columbia, 2005.

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# BRITISH COLUMBIA MINING AND MINERAL EXPLORATION OVERVIEW 2005

**Ministry of Energy, Mines and Petroleum Resources**

*Tom Schroeter, PEng/PGeo; Michael Cathro, PGeo; David Grieve, PGeo; Robert Lane, PGeo; Jamie Pardy, PGeo; and Paul Wojdak, PGeo*

## INTRODUCTION

British Columbia's mineral resources are strategically located to play a role in the international mining industry, particularly for North American and Asian markets. The province has a well-defined potential for a wide variety of minerals and deposit types. The geoscience database is extensive and easily accessed and the provincial government is committed to aggressively improving that data and encouraging new developments. With attractive energy costs, a well developed, all-weather highway system, rail links and a number of deep-water ports, British Columbia has the infrastructure to cost-effectively get coal, minerals and resulting products to markets.

Mining is an important economic driver in British Columbia with 8 metal, 9 coal and approximately 32 major industrial minerals quarries and mines, numerous placer mines, and more than 1100 aggregate pits in operation during 2005. The **Mount Polley** copper-gold mine re-opened in early 2005. In addition, 5 projects were recently awarded Environmental Certificates for production, and another 18 applications for mines are being reviewed by the government. The **Trend** and **Wolverine – Perry Creek** coal projects in the northeast are scheduled to open in early and mid-2006, respectively.

During 2005, British Columbia benefited greatly from the international resurgence in mining, mine development and mineral exploration. Commodity prices for nearly all metals and coal rose substantially over the year, led particularly by gold, copper, molybdenum and coking coal. For example, gold reached a 24-year high of over $536US per ounce in early December. Mineral exploration expenditures increased for the sixth consecutive year and are estimated at $220 million for 2005, up about 70% from 2004 (Figure 1). Through Mineral Titles Online, new mineral tenure acquisitions reached a level of 4 810 000 hectares (equivalent to about 190 000 claim units), an increase of about 400% over the previous year (Figure 2). The 2005 statistics are estimates of the volume up to about mid-December, 2005. This is the sixth year in a row that there has been an increase in mineral tenure recording. .

Both the *Mining Exploration Tax Credit Program* and *Exploration Investment Tax Credit* for flow-through investors, provide extra incentives to help attract risk capital to the province. *MapPlace*, the British Columbia government's internet geoscience information system, had approximately 6 million hits during 2005, reflecting the strong and renewed interest in mineral resource exploration and development.

Photo 1. Looking westerly over Wight Pit, Mount Polley copper-gold mine near Williams Lake.

Figure 1. Mineral exploration expenditures (1971-2005).

## MINING HIGHLIGHTS

British Columbia's operating mines in 2005 (Figure 3) are forecasting a total value of solid mineral production of $4.9 billion, an increase of 43% over 2004 (Figure 4). The province now ranks third in Canada by value of its mineral production. Coal (41%) is the single most important mineral commodity by value, and copper (24%) is second (Figure 5). Despite the increase in the value-of-production, the actual production decreased slightly for

copper, gold, silver and zinc. Molybdenum production increased 94% in value over 2004, to about $680 million. This large increase reflects a combination of much higher metal prices and increased production from the Endako, Huckleberry and Highland Valley Copper mines. Mine production and resources for 2005 are listed in Table 1.

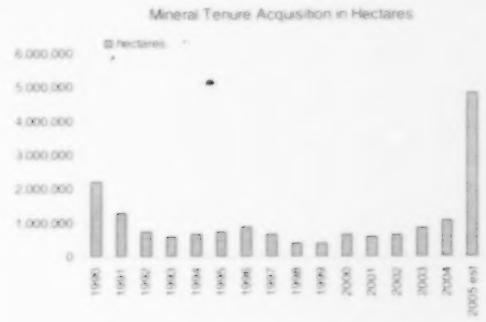



Figure 2. Mineral tenure acquisitions 1990 - 2005. Mineral Titles Online launched in January 2005 and the 2005 acquisitions of 4 810 000 hectares is equivalent to approximately 190 000 units under the old system (at approximately 23 hectares per unit).

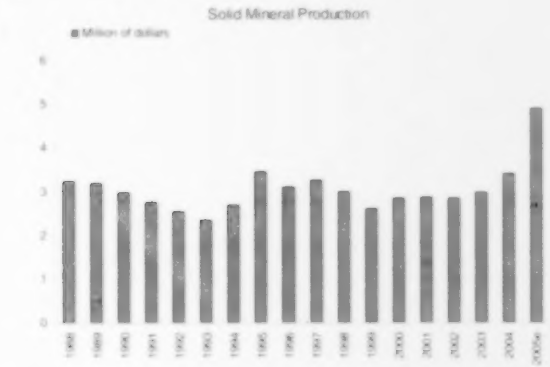



Figure 4. Solid mineral production value in British Columbia, 1988-2005.

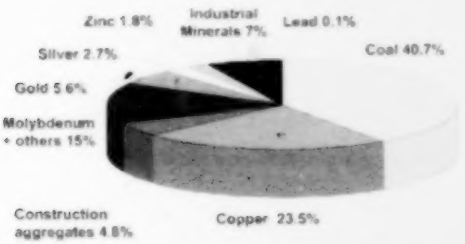



Figure 5. Forecast distribution of British Columbia mineral production by commodity – 2005.

Clean coal production for 2005 is expected to total 27.1 million tonnes, with a forecast value of approximately $2 billion. British Columbia has three major coal ports on the west coast - **Roberts Bank**, south of Vancouver, has a capacity of 26 million tonnes per year; **Neptune** terminals (Vancouver Port) has a capacity of 8 million tonnes per year and **Ridley Island** terminal, near Prince Rupert, has a capacity of 12 million tonnes per year. There was significant unused capacity, during 2005, for these coal ports. There is a fourth, deep water, ice-free port at Stewart, which may also benefit from increased exports.

British Columbia's industrial minerals production for 2005 (including sulphur) is estimated to be worth $340 million. The most economically significant industrial minerals in British Columbia are magnesite, white calcium carbonate, limestone, silica, dimension stone, gypsum, sulphur, construction aggregate, and crushed rock. Commodities produced in lesser quantities include jade (nephrite), magnetite, dolomite, barite, volcanic cinder, flagstone, industrial and medical/cosmetic clays, tufa, fuller's earth, bentonite, slag, mineral wool, roofing granules, graphite, and gemstones. There are at least 20 major sites throughout the province where upgrading of industrial minerals into value-added products takes place.

Structural materials production, including the important construction aggregate sector, is estimated to have a value of $235 million. There are aggregate operations throughout the province and they vary from large pits which supply the major metropolitan areas to many smaller pits used locally for road construction. Placer gold production and exploration in British Columbia was concentrated in the Atlin, Dease Lake, Manson Creek, Cariboo and Fort Steele areas, but the majority of the operations are small and seasonal in nature.

The provincial mining industry employed a direct workforce of more than 10 000 people province-wide and generated jobs for another 15 000 contractor and spin-off workers as well.

### *Northwest - Major Mines*

The **Eskay Creek** underground gold-silver mine, operated by Barrick Gold Corporation, is expected to produce 5500 kg of gold and 290 000 kg of silver during 2005. It is the fifth largest silver producer in the world and among the richest in terms of value per tonne of ore. Current mine life is estimated to extend until 2007.

The **Endako** open-pit molybdenum mine, operated by Thompson Creek Mining Ltd, has operated for 35 years and is a low-cost producer. Production during 2005 is forecast at 4300 tonnes of molybdenum. As a result of very strong molybdenum prices, the company has embarked on a major pit expansion.

The **Huckleberry** open-pit copper-molybdenum mine, operated by Huckleberry Mines Ltd, produced ore from its East zone pit and shipped the concentrates through the port of Stewart to Japan. Production for 2005 is forecast at 34 000 tonnes of copper and 343 tonnes of molybdenum. A large exploration program focused on the Main Zone Extension. The company has identified additional resources that could add a couple more years to

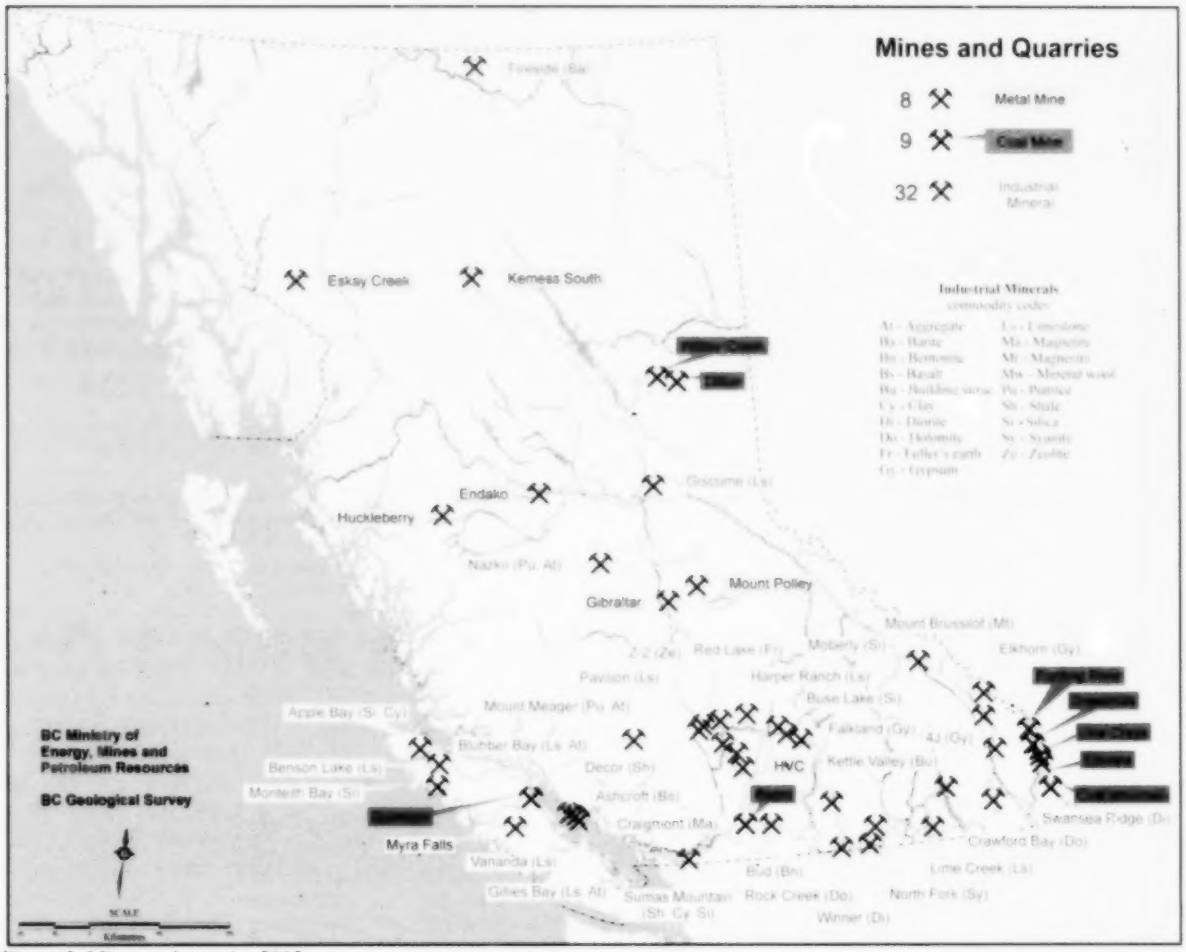


Figure 3. Mines and quarries 2005.

the mine life, currently estimated to be 2007; however, at this time it has decided not to proceed with the expansion.

### *Northeast - Major Mines*

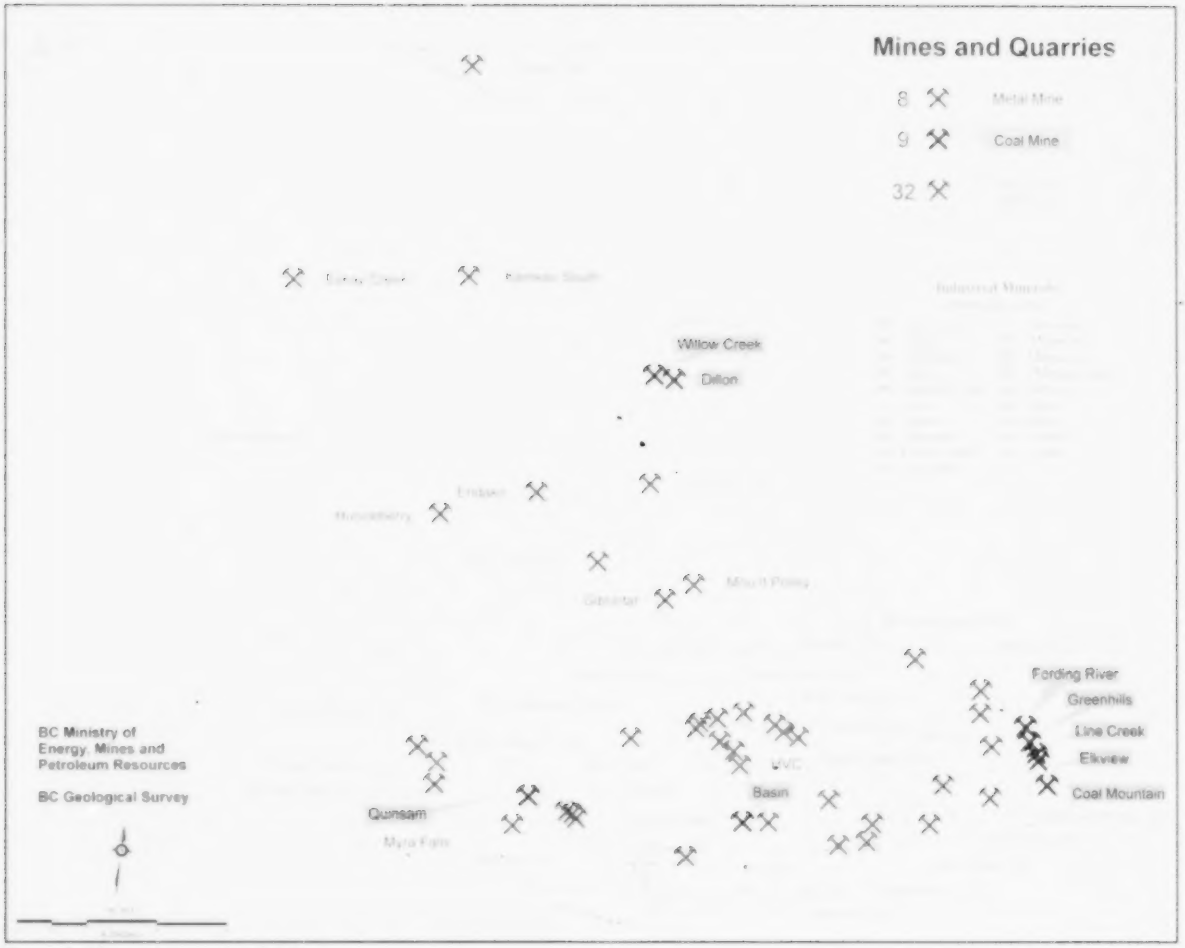
Pine Valley Mining Corp opened the **Willow Creek** coal mine, 45 km west of Chetwynd, in 2004. The company hopes to increase its daily throughput from 750 000 tonnes in 2005 to 1 to 1.5 million tonnes per year by 2006. Coal is crushed, screened and shipped raw as a pulverized coal injection (PCI) product used in steel making.

The **Burnt River - Dillon** open-pit coal mine of Western Canadian Coal Corporation, located 55 kilometres southwest of Chetwynd, began shipping PCI coal in December, 2004. In 2005, initial production is forecast at more than 700 000 tonnes of raw coal.

### *Central - Major Mines*

The **Kemess South** open-pit mine, operated by Northgate Minerals Corporation, is expected to produce 8700 kg of gold, 33 100 tonnes of copper and 10 575 kg of silver during 2005. It is the largest gold producer in the province. Existing reserves will provide mill feed until 2009, but the mine life could be extended by more than ten years if the **Kemess North** deposit is put into production.

The **Gibraltar** open-pit mine, under a joint venture partnership between Taseko Mines Ltd and Ledcor Mining Ltd, reopened in October, 2004 and is forecast to produce 26 000 tonnes of copper and 225 tonnes of molybdenum during 2005. Taseko recently announced a 30% increase in the mineral reserves; the additional reserves increase the mine life to 15.5 years. The owners are also investigating the feasibility of reopening the solvent extraction-electrowinning leach plant, as well as constructing a hydrometallurgical plant onsite for longer-term operations.

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## TABLE 1. FORECAST MINE PRODUCTION 2005

| Mine | Operator | Deposit Type / Commodity | Forecast Production in 2005 (tonnes or kilograms) | Proven and Probable Reserves (on Jan. 1, 2005) |
|---|---|---|---|---|
| **Metals** | | | | |
| Endako | Thompson Creek Mining Ltd / Sojitz Moly Resources Inc | Calcalkalic porphyry Mo | 4300 t Mo | 74 000 000 t at 0.063% Mo (Oct. 1, 2005) |
| Eskay Creek | Barrick Gold Corp | Transitional Epithermal-VMS Au-Ag | 5500 kg Au, 290 000 kg Ag | 439 901 t at 36.3 g/t Au and 1632 g/t Ag |
| Highland Valley Copper | Teck Cominco Ltd / Highmont Mining Company Ltd | Calcalkalic porphyry Cu-Mo | 172 000 t Cu, 3000 t Mo, 500 kg Au, 70 000 kg Ag | 166 500 000 t at 0.43% Cu and 0.007% Mo (note: this figure is prior to the Sept. 2005 announcement of the revision of the mine plan and extension of the mine life to 2013.) |
| Gibraltar | Taseko Mines Ltd / Ledcor Mining Ltd | Calcalkalic porphyry Cu-Mo | 26 000 t Cu, 225 t Mo | 175 958 000 t @ 0.31% Cu and 0.01% Mo |
| Huckleberry | Imperial Metals Corp / Mitsubishi Material Corp / Dowa Mining Ltd / Furukawa Company Ltd / Marubeni Corp | Calcalkalic porphyry Cu-Mo | 34 000 t Cu, 343 t Mo | 19 435 000 t at 0.529% Cu, 0.015% Mo and 0.059 g/t Au |
| Kemess South | Kemess Mines Ltd (Northgate Minerals Corp) | Calcalkalic porphyry Au-Cu | 8700 kg Au, 33 100 t Cu | 91 700 000 t at 0.699 g/t Au & 0.227% Cu; Kemess North (Probable) 414 000 000 t at 0.31 g/t Au and 0.16% Cu |
| Mount Polley | Imperial Metals Corp | Alkalic porphyry Cu-Au-Ag | 14 000 t Cu, 1060 kg Au, 6660 kg Ag | 44 000 000 t at 0.45 % Cu & 0.30 g/t Au |
| Myra Falls | NVI Mining Ltd (Breakwater Resources Ltd) | Zn-Cu-Au-Ag | 50 000 t Zn, 7900 t Cu, 974 kg Au, 36 400 kg Ag | 6.392 Mt at 6.7% Zn, 1.1% Cu, 1.4 g/t Au, 49 g/t Ag (M and I) |
| Shasta | Sable Resources Ltd | Epithermal vein Au-Ag | 15.2 kg Au, 321 kg Ag cut off | |
| **Coal** | | | | |
| Basin (Tulameen) | Compliance Energy Corp | Thermal coal | 75 000 t | |
| Coal Mountain | Elk Valley Coal Partnership | Metallugical coal | 2 350 000 t | 28 000 000 t |
| Dillon | Western Canadian Coal Corp | Metallurgical (PCI) coal | 700 000 t | 1 370 000 t |
| Elkview | Elk Valley Coal Partnership | Metallugical coal | 6 000 000 t | 249 000 000 t |
| Fording River | Elk Valley Coal Partnership | Metallugical coal | 9 300 000 t | 257 000 000 t |
| Greenhills | Elk Valley Coal Partnership | Metallugical coal | 5 100 000 t | 98 000 000 t |
| Line Creek | Elk Valley Coal Partnership | Metallugical and thermal coal | 2 500 000 t (including 300 000 t thermal) | 20 000 000 t |
| Quinsam | Quinsam Coal Corp (Hillsborough Resources Ltd) | Thermal & PCI coal | 532 000 t clean coal | 11 years of production |
| Willow Creek | Pine Valley Mining Corp | Metallurgical (PCI) coal | 750 000 t | 12 300 000 t saleable |

**Industrial Minerals**

| Mine | Operator | Deposit Type / Commodity | Mine | Operator | Deposit Type / Commodity |
|---|---|---|---|---|---|
| 4J | Georgia-Pacific Canada Inc | Gypsum | Kettle Valley quarries | Kettle Valley Stone Company | Ashlar, flagstone, thin veneer |
| Apple Bay | Electra Gold Ltd | Geyserite | Lime Creek | Imasco Minerals Inc | Limestone |
| Ashcroft | IG Machine and Fiber Ltd (IKO Industries Ltd) | Basalt roofing granules | Moberly | Heemskirk Canada | Silica sandstone |
| Benson Lake | Imasco Minerals Inc | Limestone | Monteith Bay | Lehigh Northwest Cement Ltd | Geyserite |
| Blubber Bay | Ash Grove Cement Corp | Limestone aggregate, dolomitic lst | Mount Brussilof | Baymag Inc | Magnesite |
| Bud | Western Industrial Clay Products Ltd | Bentonite | Mount Meager | Great Pacific Pumice Inc | Pumice |
| Buse Lake | Lafarge Canada Inc | Volcanic ash (alumina-silica) | Nazko | Canada Pumice Corp | Lava rock |
| Craigmont | Craigmont Mines Joint Venture | Magnetite tailings | North Fork | Roxul (West) Inc | Syenite (mineral wool) |
| Crawford Bay | Imasco Minerals Inc | Dolomite | Pavilion | Graymont Western Canada Inc | Limestone |
| Decor | Pacific Bentonite Ltd | Burnt shale (alumina and landscape rock) | Red Lake | Western Industrial Clay Products Ltd | Diatomaceous earth, leonardite |
| Elkhorn | BPB Canada Inc | Gypsum | Rock Creek | Mighty White Dolomite Ltd | Dolomite |
| Falkland | Lafarge Canada Inc | Gypsum | Sumas Mountain | Clayburn Industries Ltd and cement manufacturer partners | Clay, shale and sandstone |
| Fireside | Fireside Minerals Inc | Barite | Swansea Ridge | Canadian Pacific Railway | Diorite (mineral wool) |
| Gillies Bay | Texada Quarrying Ltd (Lafarge Canada Inc) | Limestone, aggregate | Vananda | Imperial Limestone Company Ltd | Limestone |
| Giscome | Canadian National Railway Company | Basalt (railroad ballast) | Winner | Roxul (West) Inc | Diorite (mineral wool) |
| Harper Ranch | Lafarge Canada Inc | Limestone | Z-2 | Industrial Minerals Processors | Zeolite |

The **Mount Polley** open-pit mine, operated by Imperial Metals Corporation, reopened in early 2005, and is forecast to produce 14 000 tonnes of copper, 1060 kilograms of gold and 6660 kg of silver during the year. Mine life is projected to 2011, with approximately 230 employees. The company also conducted a large, property-wide exploration program, including 40 000 metres of diamond drilling. Several new, potentially significant zones of copper-gold mineralization were intersected. Drilling below the Wight pit on the Northeast zone, intersected 25.1 metres grading 4.43% Cu, 1.28 g/t Au and 26.96 g/t Ag. Imperial is also examining the potential for underground mining.

The **Nazko** lava rock quarry near Quesnel, operated by Canada Pumice Corporation, doubled its production level over the past few years.

### *Kootenays - Major Mines*

Elk Valley Coal Corporation in southeastern British Columbia operates 5 coking coal mines, **Fording River, Greenhills, Line Creek, Elkview** and **Coal Mountain** providing it with flexibility to blend coals from different mines to meet customer needs. The company expects to produce about 25.3 million tonnes in 2005. The Corporation, 62% owned by Fording Canadian Coal Trust and 38% by Teck Cominco Limited, is the world's second-largest supplier of metallurgical coal. In 2005, Elk Valley Coal Corporation signed letters of intent with two of the world's largest steelmakers, Japan's Nippon and South Korea's Posco.

Photo 2. Line Creek coal mine, Elk Valley.

During 2005, production of 65 000 tonnes of silica by Heemskirk Canada, was forecast from the **Mt. Moberly** mine, located near Golden. Northeast of Radium Hot Springs, Baymag Inc produces high-quality magnesite from its **Mount Brussilof** open-pit mine. Production in 2005 was projected to be 180 000 tonnes.

Further south, BPB Canada Inc operates the **Elkhorn** gypsum mine, east of Windermere, and Georgia-Pacific Canada Inc produces gypsum from the **Four J** mine, southeast of Canal flats. Production at the Elkhorn and Four J mines for 2005 was projected to be approximately 550 000 and 275 000 tonnes, respectively. Imasco Minerals Inc produces a variety of crushed and ground rock products at its Creston Operations plant near Sirdar. These products are derived from rock from an underground dolomite mine at **Crawford Bay**, a limestone quarry at **Lime Creek** east of Salmo and a granite quarry at Sirdar. Mighty White Dolomite Ltd produces a range of crushed and ground dolomite products from its quarry and plant at **Rock Creek**. The **Winner** and **North Fork** quarries, west and north of Grand Forks, respectively, ship diorite and syenite-monzonite, respectively to the Roxul (West) Inc mineral wool manufacturing plant in Grand Forks.

Crystal Graphite Corporation produces and ships high-purity flake graphite from its **Black Crystal** property and mill, west of the Slocan valley.

### *South-Central - Major Mines*

The **Highland Valley Copper** open-pit mine near Kamloops, operated by Teck Cominco Ltd and Highmont Mining Company, is Canada's largest base metal mine. It is the fifth largest open pit mining operation in the world, with a daily mill throughput averaging 136 000 tonnes of rock. Production in 2005 is expected to be 172 000 tonnes of copper, 3000 tonnes of molybdenum and minor byproduct gold and silver. In September 2005, it was announced that the mine life would be extended another five years to 2013. Teck Cominco is also considering building a modern hydrometallurgical smelter on site. Mining in the **Highmont East** pit re-commenced in late 2005.

Compliance Energy Corporation mined about 75 000 tonnes of thermal coal from its **Basin** property, near Tulameen. A wash plant, formerly at the Similco site, was moved to the Basin site.

Over 250 people are employed at industrial mines quarries and processing plants in the South-Central region. The **Kamloops** cement plant and **Harper Ranch** limestone quarry of Lafarge Canada Inc were expected to operate close to capacity in 2005. Near Cache Creek, Graymont Western Canada Inc operates the **Pavilion** limestone quarry and lime plant. Employing mainly First Nations workers, the operation produces lime used in pulp mills, mines and other industrial processes. The **Ashcroft** basalt quarry and roofing granule plant east of Ashcroft, operated by IG Machine and Fiber Ltd, produces about 250 000 tonnes of roofing granules in six distinct colours. Craigmont Mines Ltd processes and recovers about 70 000 tonnes of magnetite annually from its **Craigmont** tailings operation near Merritt. The magnetite is used in most coal washing plants in western Canada.

Western Industrial Clay Products Ltd manufactures a variety of products at its plant in Kamloops, using raw materials from its **Red Lake** diatomaceous earth quarry

northwest of Kamloops and its **Bud** bentonite quarry at Princeton. Zeolite was mined from Industrial Mineral Processors' **Z2** quarry near Cache creek and processed at a plant in Ashcroft. At Princeton, Zeo-Tech Enviro Corporation processed zeolite from its **Zeo** quarry. Okanagan Opal Inc produces attractive fire opal gemstones and jewelry from its **Klinker** property, west of Vernon. Decorative rock and dimension stone are produced at numerous small quarries throughout the region (*e.g.* **Nipple Mountain** and **Begbie** quarries) by small companies, including Kettle Valley Stone Company in Kelowna.

### *Southwest - Major Mines*

The **Myra Falls** underground mine west of Campbell River, operated by NVI Mining Ltd, a subsidiary of Breakwater Resources Ltd, has been in operation since 1966. Just over 900 000 tonnes of ore were estimated to be processed during 2005 in the mill, producing copper, zinc-silver and gold concentrates. The company continues to optimize its mining plan and is considering the addition of a lead circuit. In 2005, the company conducted exploration along the Marshall trend and in the Extension, 43 Block and HW zones.

The largest limestone production center in the province is **Texada Island**, where three quarries, **Gillies Bay**, **Blubber Bay** and **Vananda** are forecast to ship close to 6 million tonnes in 2005. White calcium carbonate is produced from **Gillies Bay** and also from the **Benson Lake** quarry on northern Vancouver Island. **Texada Island** limestone producers are capitalizing in the rapidly expanding market for crushed rock, the natural byproduct of their limestone operations. , Lehigh Northwest Cement Limited ships aggregate from its facility at **Sechelt** to the San Francisco Bay area. Nineteen large aggregate quarries and pits in the Lower Mainland and coastal area are forecast to produce about 17 million tonnes in total in 2005.

Clayburn Industries Ltd processes clay from its **Sumas Mountain** operation and Clayburn, Lafarge Canada Inc and Lehigh Northwest Cement Ltd produce shale and sandstone from their **Sumas** quarry. Ironwood Clay Company Inc produces ,cosmetic/medical clay seasonally from its **De Cosmos Lagoon** quarry on Hunter Island, west of Bella Coola.

Westcoast Granite Manufacturing Inc, Margranite Industries and Matrix Marble Corporation operate stone-processing plants. Dimension stone is quarried from several locations, including **Skagit Valley**, **Whistler**, **Tahsis**, **Hardy Island, Fox Island**, **Gordon River**, **Hisnet Inlet** and **Haddington Island**. Great Pacific Pumice Ltd ships a variety of pumice-based products from its **Pum** property on Mount Meager, north of Pemberton.

Photo 3. Cox Station quarry loadout along the Fraser River, Lower Mainland.

Electra Gold shipped approximately 120 000 tonnes of chalky geyserite (silica and alumina) from its **Apple Bay** property, west of Port Hardy, to supply cement plants in Vancouver and Seattle. On western Vancouver Island, Lehigh Northwest Cement produced 29 500 tonnes of silica-alumina product from its quarry at **Monteith Bay**.

Hillsborough Resources is forecast to produce from 532 000 tonnes from its **Quinsam** thermal coal mine on Vancouver Island. A modest exploration drilling program was conducted at the Quinsam mine.

## MAJOR DEVELOPMENT PROJECTS

### *Northwest - Major Development Projects*

During 2005, Redcorp Ventures received federal environmental approval in addition to its BC Environmental Assessment Certificate for its **Tulsequah Chief** project, south of Atlin. East of Atlin, Adanac Moly Corporation filed its **Ruby Creek** molybdenum project report to the BC Environmental Assessment Office (EAO), for a proposed 20 000 tonnes per day milling operation for over 20 years. A final feasibility study was expected by year's end. East of Dease Lake, Western Keltic Mines completed another large drilling program and metallurgical testing aimed at further evaluating its **Kutcho Creek** deposits for possible open pit exploitation of the higher-grade core, along with the adjacent Esso West deposit. Results from the current metallurgical program show a marked improvement in both copper recovery and concentrate grade compared with earlier work. A feasibility study was initiated in 2005 and a project report was submitted to the BC Environmental Assessment Office. At its **Mount Klappan** anthracite coal property, 75 kilometres southeast of Dease Lake, Fortune Minerals Limited carried out drilling to enhance resources and collect engineering and environmental data

necessary for mine development of a 1.5 to 3 million tonnes per year operation.

In August 2005, bcMetals received an Environmental Certificate for its **Red Chris** copper-gold project, east of Iskut. Its feasibility study identifies the potential for a 30 000 tonnes per day milling operation, producing 47 200 tonnes of copper and 2208 kilograms of gold annually, over a mine life of 25 years.

The largest exploration program in the province, with $50 million in expenditures and a 200 – person, fly-in camp, was at the **Galore Creek** gold-copper-silver project, located southwest of Dease Lake. Utilizing ten drill rigs, NovaGold Resources expanded the previously identified resources and discovered additional zones of mineralization. An economic assessment of the project in early 2005 indicated the potential for a 65 000 tonnes per day milling operation for over 20 years. The company plans to submit its project report to the BC Environmental Assessment Office in early 2006.

Photo 4. Looking northerly over 200-person exploration camp, Galore Creek.

Photo 5. Looking southwesterly over the Davidson molybdenum property on Hudson Bay Mountain, near Smithers.

Near Stewart, development projects for aggregate include **Bear River** and **Swamp Point**.

In the Babine camp, Pacific Booker Minerals continued to study the feasibility of advancing its **Morrison/Hearne Hill** copper-gold project to production. At Smithers, Blue Pearl Mining is developing its **Davidson** (formerly Yorke-Hardy) molybdenum deposit. Underground drilling from an existing adit was initiated in late 2005. The company is evaluating the potential for a 2000 tonnes per day high-grade, underground mine, with processing being done offsite either at the Endako or Huckleberry mines. A feasibility study is expected in mid-2006.

### *Northeast - Major Development Projects*

The Burnt River coal property includes the nearby 30-million tonne **Brule** deposit owned by Western Canadian Coal Corporation. The company applied for an Environmental Assessment Certificate for this deposit in 2005, in preparation for mine development in 2006. It also continued exploration on its **Wolverine - Perry Creek** deposit, about 20 kilometres west of Tumbler Ridge; production is scheduled for mid-2006. Northern Energy and Mining Inc (NEMI) completed construction on its **Trend** property, 25 kilometres south of Tumbler Ridge and prepared for commercial production in early 2006. It continued exploration on its Trend-Roman Mountain deposit.

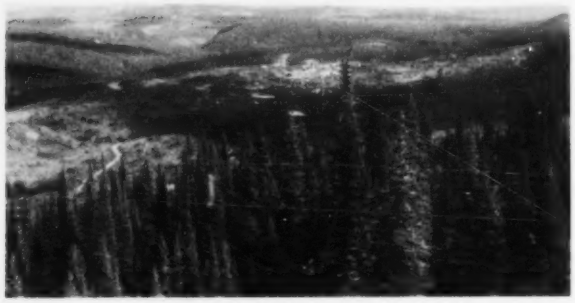


Photo 6. The Trend coal mine is scheduled for production in early 2006.

### *Central - Major Development Projects*

Northgate Minerals' **Kemess North** project, near its Kemess South mine, is being reviewed by a joint federal and provincial panel. If approved, the combined operations of the mine and the Kemess North deposit could extend the mine life to 2020. During 2005, a large

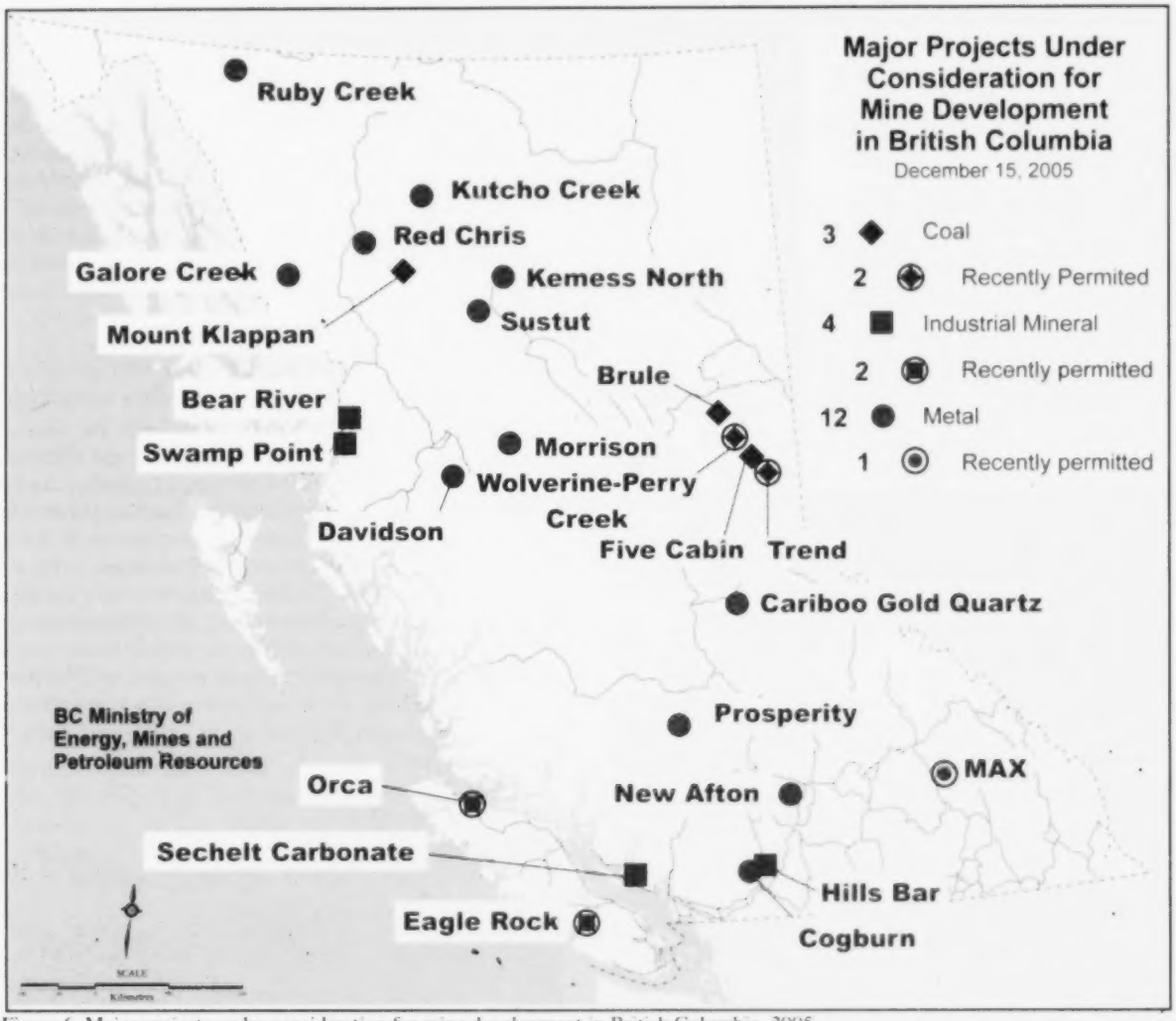



Figure 6. Major projects under consideration for mine development in British Columbia, 2005.

deep drilling program at the eastern end of the large system resulted in the discovery of additional potentially significant mineralization.

Cross Lake Minerals is expected to announce the reopening of its **QR** gold mine, east of Quesnel, in 2006. It continued to drill for additional resources, especially in the North zone.

Placer Dome reevaluated its **Mt. Milligan** gold-copper project, west of Mackenzie. It plans to release the results of its recently updated feasibility study in early 2006.

### *South-Central - Major Development Projects*

Taseko Mines Limited reinitiated work on its **Prosperity** copper-gold project, southwest of Williams Lake, after receiving an extension for its Project Application under the Environmental Assessment process until April 30, 2007. Current resources are estimated at 490.8 million tonnes grading 0.22% Cu and 0.43 g/t Au.

The historic **Bralorne** gold mine near Goldbridge was the focus of considerable underground development and drilling, in addition to a small amount of test milling.

In the Kamloops region, New Gold Inc completed a major underground exploration program on its **New Afton** copper-gold-silver deposit. The deposit sits directly beneath an open pit that produced from 1977 to 1987. It is a higher-grade zone that would have to be mined from underground, if proven to be economically feasible. Samples for metallurgical testing and geotechnical analyses were collected. Several higher-grade drill intersections than indicated by the current resource model were encountered. A feasibility study is expected in late 2006.

**TABLE 2. MAJOR PROJECTS UNDER CONSIDERATION FOR MINE DEVELOPMENT IN BRITISH COLUMBIA, 2005**

| Project Name | Owner/Operator | Commodities |
|---|---|---|
| Bear River | Beacon Ventures Inc | Aggregate |
| Brule | Western Canadian Coal Corp | Coal |
| Cariboo Gold Quartz | International Wayside Gold | Au |
| Cogburn | North Pacific Alloys Ltd | Mg |
| Davidson | Blue Pearl Mining Ltd | Mo |
| Eagle Rock | Eagle Rock Materials Ltd | Aggregate |
| Five Cabin | Hillsborough Resources Limited | Coal |
| Galore Creek | NovaGold Resources Inc | Cu-Au-Ag |
| Hills Bar | Qualark Resources Inc | Aggregate |
| Kemess North | Northgate Minerals Corp | Au-Cu |
| Kutcho Creek | Western Keltic Mines Inc | Cu-Zn-Au-Ag |
| MAX | Roca Mines Inc | Mo |
| Morrison/Hearne Hill | Pacific Booker Minerals Inc | Cu-Au |
| Mount Klappan | Fortune Minerals Ltd | Coal |
| New Afton | New Gold Inc | Cu-Au |
| Orca | Polaris Minerals Ltd | Aggregate |
| Prosperity | Taseko Mines Ltd | Au-Cu |
| Red Chris | bcMetals Corp | Au-Cu |
| Ruby Creek | Adanac Moly Corp | Mo |
| Sustut | Doublestar Resources Ltd | Cu-Ag |
| Swamp Point | Ascot Resources Ltd | Aggregate |
| Sechelt Carbonate | Pan Pacific Aggregates Ltd | Limestone/dolomite |
| Trend | Northern Energy and Mining Inc | Coal |
| Wolverine-Perry Creek | Western Canadian Coal Corp | Coal |

Photo 7. Looking southwesterly over the New Afton open pit that is currently being explored for the potential to become an underground mine.

Highland Valley Copper collected a 300 000-tonne bulk sample and began commercial-scale mining from its dormant **Highmont East** pit to take advantage of high molybdenum prices. In addition, drilling in the nearby **Highmont South** area was conducted to evaluate the potential for developing a new pit.

### *Southeast – Major Development Projects*

In November 2005 Roca Mines Inc received a mining permit for its high-grade (260 000 tonnes grading 1.95% $MoS_2$), underground **MAX** molybdenum project near Trout Lake, southeast of Revelstoke. The company plans to fast track initial development of a 250 tonnes per day milling operation, processing 72 000 tonnes of ore per year for the first three years. Production is forecast in late 2006, with the concentrate being sold on site.

Near Greenwood, Merit Mining continued drill testing of its **Lexington** (Grenoble) gold-copper deposit. In 2006, it plans on collecting a 10 000-tonne bulk

sample, followed by limited production from its Zip mill which will be built nearby.

Photo 8. Portal area at the MAX molybdenum site being readied for production in late 2006.

### *Southwest - Major Development Projects*

In recent years, the most significant industrial minerals trend in British Columbia has been an increasing export of crushed stone and natural aggregate to urban centres along the west coast of the United States and higher sales within British Columbia's Lower Mainland. These markets continue to be very competitive as industry identifies new potential for development. A good example of this is the recently permitted, $100-million construction aggregate complex (**Eagle Rock Quarry**) and ship-loading facility, near Port Alberni. Other significant development projects include the recently permitted **Orca** sand and gravel near Port McNeil and **Hills Bar** aggregate near Yale. The **Sechelt Carbonate** project is a proposed limestone/dolomite development with annual production forecast at 4 to 6 million tonnes over a 25-year mine life.

## MINERAL EXPLORATION

There were approximately 200 exploration projects in British Columbia with budgets in excess of $100 000 (selected projects listed in Table 3 and shown in Figure 7), up 19% from 2004. This includes 43 projects with expenditures in excess of $1 million, up 43% from 2004. The number of drilling programs and the total metres drilled rose significantly, with about 235 projects aggregating approximately 660 000 metres, up 38% and 27% respectively from 2004. Approximately 82% of exploration spending was on advanced projects, while there were very few grassroots programs (Figure 8). The targets sought, by deposit type, are shown in Figure 9. Thirty-five bulk sample and/or metallurgical testing programs were completed in 2005, including **Bear Coal**, **Belcourt**, **Bralorne**, **Five Cabin**, **Highmont**, **East**, **MAX**, **New Afton**, **Saxon**, **Schaft Creek** and **Turnagain**.

Coal tenure acquisitions increased dramatically in 2005, fueled by the high coal prices, particularly in the northeast. Provincial exploration expenditures for coal increased sixfold to $40 million in 2005. Twenty-eight drilling projects with an aggregate of approximately 110 000 metres were completed. Exploration expenditures on industrial minerals projects are estimated at $3.8 million.

At least 28 new mineral discoveries were reported in 2005 (Figure 10).

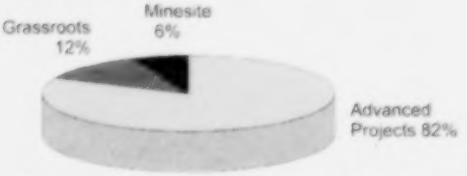



Figure 8. Exploration expenditures by type of program – 2005.

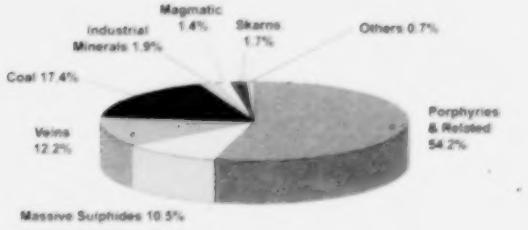



Figure 9. Percentage of project expenditures, focused on specific deposit types in 2005.

### *Northwest - Major Exploration Projects*

In the Atlin region, Prize Mining Corp drilled along the Pine Creek fault structure on its **Yellowjacket** gold project. Across the Tulsequah River from the Tulsequah Chief property, Canarc Resources continued infill drilling on the C vein system at its **New Polaris** gold project. The C vein flattens below the deepest level of the mine; high-grade intersections were reported over broad widths.

Southwest of Atlin, Cangold Limited and Rimfire Minerals drilled the Talisker polymetallic zone, as well as several other untested anomalies on their **Thorn** property. Barrick Gold Corp conducted a large regional reconnaissance exploration program (**Kizmet**) from the Thorn area northwestwards towards the Taku River in the search for high-sulphidation epithermal gold targets.

Drilling by Cusac Gold Mines at its **Taurus II** bulk tonnage disseminated gold prospect, in the Cassiar region, resulted in defining new zones of mineralization, adjacent to the main **Taurus** gold prospect owned by American Bonanza Gold Corp. Hard Creek Nickel Mines continued drilling on its **Turnagain** nickel-

copper-platinum group elements property, west of Dease Lake. Disseminated pyrrhotite and pentlandite occur within dunite and wehrlite in the Horsetrail zone. Positive results are expected to increase the resources in this zone and a preliminary economic assessment of the project is scheduled for mid-2006. Metallurgical testing is ongoing.

Firesteel Resources continued drill testing and trenching on the DK prospect on its **Copper Creek** porphyry copper-gold property. Canadian Gold Hunter extended the strike length of its copper-gold mineralization to over 1500 m on its Donnelly zone at its **Kinaskan (GJ)** project, west of Iskut. The western-most drill hole returned 46.95m grading 0.832% Cu and 1.31 g/t Au, within 130.95m grading 0.44% Cu and 0.647 g/t Au.

Copper Fox Metals drilled its **Schaft Creek** copper-molybdenum-gold-silver deposit to verify previous resources estimated at 847 million tonnes grading 0.292% Cu, 0.019% $Mos_2$, 0.202 g/t Au and 1.8 g/t Ag, and for metallurgical testing. It has commenced the EA process, which includes a preliminary review of possible access routes to Highway 37.

Photo 9. Looking easterly over Schaft Creek.

On the **Foremore** property, west of Bob Quinn Lake, Roca Mines drill tested its Kuroko-style massive sulphide target. Northgate Minerals, under an option agreement with Rimfire Minerals, drilled the **RDN** Eskay Creek type target. Drilling on the Arctic Grid confirmed the prospective rock assemblage extends for at least five kilometres.

Falconbridge Ltd carried out drilling on four priority targets (Iron Cap, Main Copper, West Mitchell and Icefields), which lie outside the known resources on the **Kerr-Sulphurets** porphyry copper-gold project.

North of Stewart, Tenajon Resources reported significant results from its underground and surface drilling program on its **Summit Lake (Scottie Gold)** gold mine. Serengeti Resources and Rimfire Minerals reported additional drill results from their **Tide** bulk tonnage gold prospect. Drilling by Bell Resources beneath the South Leduc glacier on its **Granduc** property located a 244-metre southward and 244-metre downdip extension of the former ore zones. Pinnacle Mines conducted a large drilling program on its **Silver Coin** gold-silver-zinc-lead project, which adjoins the historic Premier mine on the west. It has outlined mineralization over a strike length of 2000 metres, a vertical height of 700 metres and widths of 10 to 100 metres in the Main Breccia zone. South of Stewart, Ascot Resources is exploring a significant sand and gravel deposit at **Swamp Point**. It has applied for a mine development permit. Sabina Resources, under an option agreement with Teuton Resources, continued drill testing of its mesothermal LG gold-silver vein system on the **Del Norte** property, south of Stewart. North of Alice Arm, Tenajon Resources drilled its **Ajax** molybdenum deposit to test the previously identified resource of 178.5 million tonnes grading 0.07% Mo. The drilling also extended the mineralization and increased the grades at depth.

South of Houston, Gold Reach Resources discovered potentially significant porphyry copper-gold-molybdenum mineralization at its **Seel** property. Aumega Discoveries drilled the **Poplar** deposit, where previous resources were estimated at 144 117 000 tonnes grading 0.368% Cu, 0.011% Mo, 6.86 g/t Ag, plus gold. Manson Creek Resources reported a new zone (Burn) of porphyry copper-molybdenum mineralization on its **CR** property. New Cantech Ventures completed a large drilling program on its **Lucky Ship** molybdenum deposit. It is targeting an initial 5-million tonne resource, within a previously reported resource of 18.4 million tonnes grading 0.098% Mo.

### *Northeast - Major Exploration Projects*

Coal exploration spending on Peace River coalfields on 20 projects totalled approximately $27 million and included approximately 94 000 metres of drilling. The deposits lie within a 400-kilometre northwesterly trending belt extending from the Alberta-British Columbia border past Hudson's Hope. When developed, the coal from these properties will be exported for use in the steel-making industry. Western Canadian Coal Corporation and NEMI joined forces in 2005 to explore and develop the **Saxon** and **Belcourt** coal projects near Tumbler Ridge. Both properties have had feasibility reports prepared in the past but were never developed. The mines would need approximately 100 kilometres of rail extension to connect to the existing CN line. Major exploration programs, most including drilling, were completed on the following projects: **Belcourt North** (Western Canadian Coal/NEMI), **Belcourt South** (Western Canadian Coal/NEMI), **Falling Creek** (Kennecott), **Five Cabin** (Hillsborough), **Goodrich-Central South** (First Coal Corp), **Lossan** (Cline Mining), **Omega** (Western

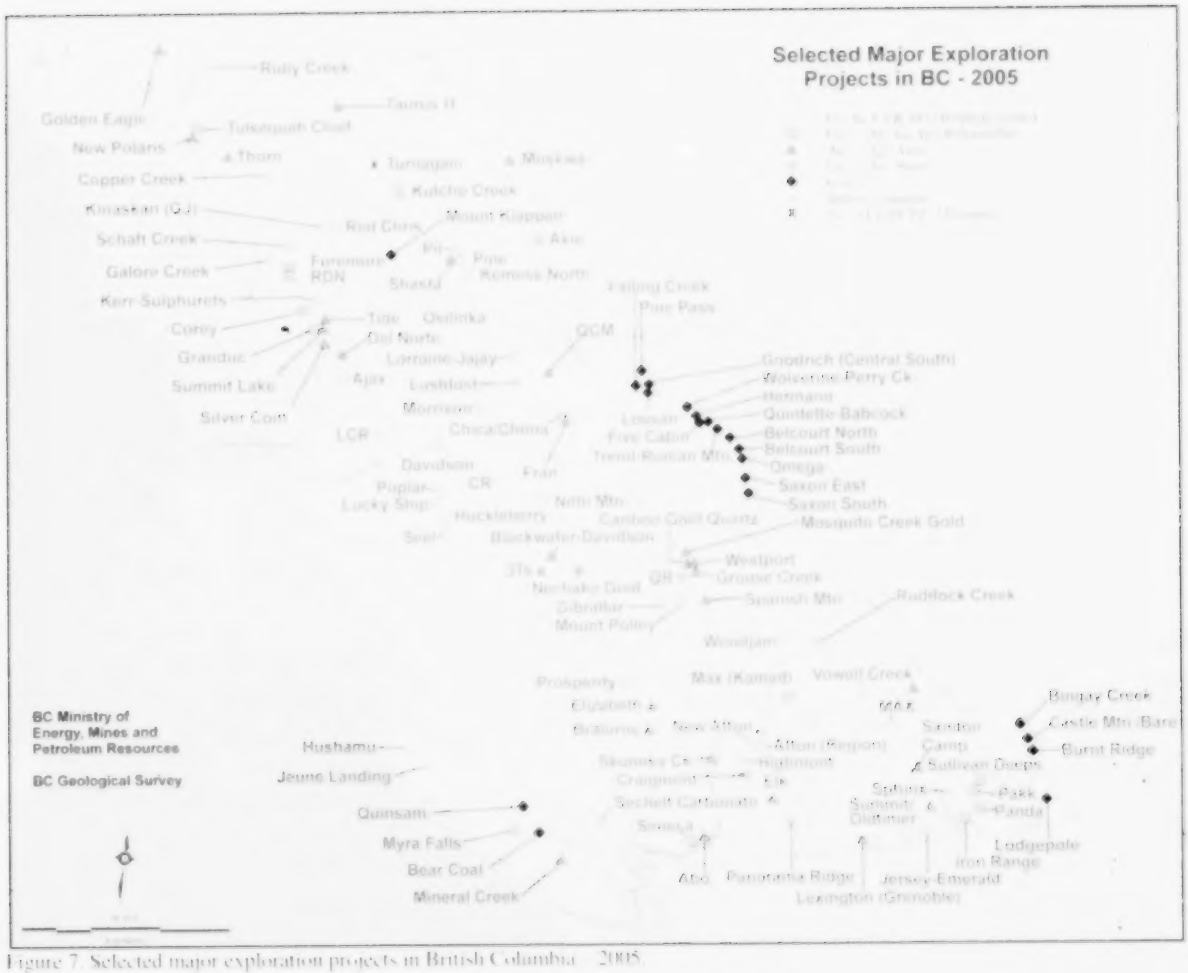



Figure 7. Selected major exploration projects in British Columbia – 2005.

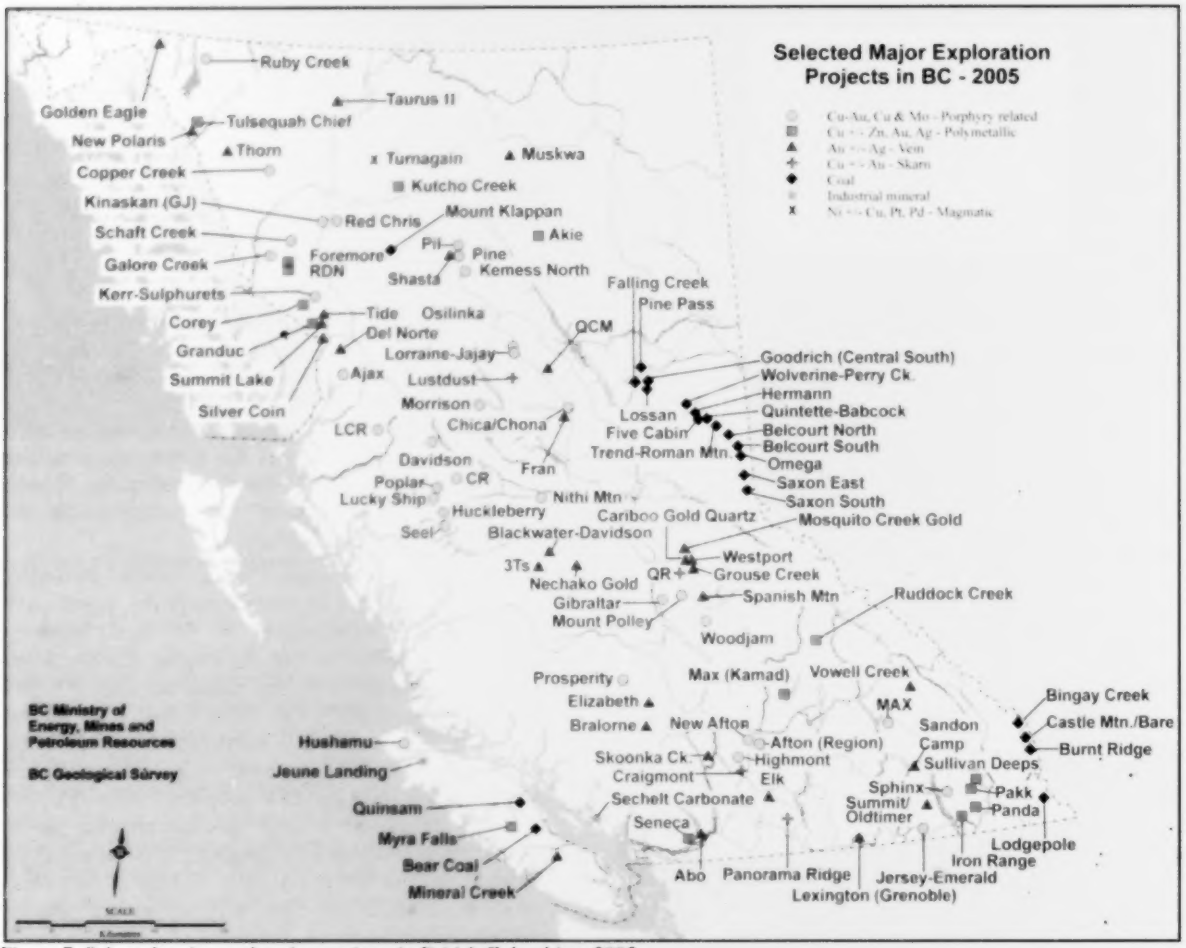
Canadian Coal/NEMI), **Pine Pass** (Falls Mountain Coal), **Quintette-Babcock Mountain** (Elk Valley Coal), **Saxon East** and **Saxon West** (Belcourt Saxon Coal Limited), **Trend-Roman Mountain** (NEMI), **Wolverine-Hermann North** (Western Canadian Coal) and **Wolverine-Perry Creek** (Western Canadian Coal). Many of these have existing resources; some will be announcing new and/or revised resources in 2006.

Exploration was reactivated in the Gataga sedex belt by Mantle Resources, under an option agreement with Ecstall Resources, on the **Akie** zinc-lead-silver property. A late season drilling program yielded encouraging results (e.g. 37.05 metres grading 11.30% Zn, 2.65% Pb and 21.2 g/t Ag, including 17.93 metres grading 18.08% Zn, 4.20% Pb and 30.1 g/t Ag). Near the British Columbia-Yukon border, south of Toad River, Twenty Seven Capital explored the **Muskwa** iron oxide copper gold target.

### *Central - Major Exploration Projects*

In the Toodoggone region, Northgate Minerals drilled several properties peripheral to its Kemess South mine. At its **Kemess North** project, 7 kilometres to the north, the company discovered additional, potentially significant gold-copper mineralization at the east end of the large system. The project is currently being reviewed by a joint federal-provincial panel; a decision is expected in 2006. In late 2005, Stealth Minerals announced an option agreement with Placer Dome on its **Sickle Creek** high-sulphidation epithermal gold-silver property. Finlay Minerals and Cascadero Copper drilled porphyry and vein targets on their **Pil North** and **Pine** properties, respectively. Drilling by Bishop Gold on the southern Cliff Creek zone on its **Lawyers** gold-silver property outlined the southern end of a quartz breccia zone from 65 to 80 metres in width.

Alpha Gold drilled its large **Lustdust** skarn gold-copper property, northwest of Fort St. James. Teck

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Alpha Gold drilled its large **Lustdust** skarn gold-copper property, northwest of Fort St. James. Teck

## TABLE 3. SELECTED MAJOR EXPLORATION PROJECTS IN BRITISH COLUMBIA IN 2005

| Property | Operator | Minfile (NTS) | Commodity | Deposit Type | Work Program | Region |
|---|---|---|---|---|---|---|
| 3Ts | Southern Rio Resources Ltd | 093F 055, 068 | Au-Ag | Epithermal Vein | A, P, G, GC, DD | C |
| Abo | Eagle Plains Resources Ltd | 095HSW092 | Au-Ag-Zn-Cu | Vein | DD (3068 m) | SW |
| Ajax | Tenajon Resources Corp | 103P 223 | Mo | Porphyry | DD (1165 m, 3 holes) | NW |
| Ajax (Abacus) | Abacus Mining and Exploration Corp / Teck Cominco Ltd | 92INE012, 013 | Cu, Au | Alkalic Porphyry | DD (~2440 m, 5 holes) | SC |
| Akie | Mantle Resources Ltd | 094F 031 | Zn-Pb-Ag | Sed-Ex | DD (2000 m, 3 holes) | C |
| Basin (Tulameen) Coal | Compliance Energy Corp | 092HSE 094, 157 | Thermal Coal | Sedimentary | DD (~1320 m, 3 holes) | SC |
| Bear Coal | Compliance Energy Corp | 092F 313 | Coal | Sedimentary | G, TR, RD/DD(1550 m, 33 holes) | SW |
| Belcourt North | Belcourt Saxon Coal Limited Partnership | 093I 014 | Coking Coal | Sedimentary | A, G, RD & DD (~9550 m, 42 holes), GP, CQ, PF | NE |
| Belcourt South | Belcourt Saxon Coal Limited Partnership | 093I 014 | Coking Coal | Sedimentary | A, G, RD & DD (4313 m, 43 holes), GP, CQ, PF | NE |
| Bingay Creek | Hillsborough Resources Ltd | 082JSE011 | Metallurgical coal | Sedimentary | EN, RC (1371 m) | SE |
| Blackwater-Davidson | Southern Rio Resources Ltd | 093F 037 | Au-Ag | Epithermal Vein | A, DD (939 m, 5 holes) | C |
| Bralorne (Cosmopolitan, Peter Vein, 51B Vein) | Bralorne Gold Mines Ltd | 92JNE164, 001 | Au, Ag | Mesothermal Vein | DD (~5000 m); UG (~1070 m); UG-BS (~3200 t); test milling (~21,000 t) | SC |
| Broken Hill | Timer Explorations Inc | 82M 279, 280, 281 | Zn, Pb, Ag | Stratiform | DD | SC |
| Burnt Ridge | Elk Valley Coal Corp | 082JSE001 | Metallurgical coal | Sedimentary | A, RC (4496 m, 17 holes) | SE |
| Castle/Bare Mountains | Elk Valley Coal Corp | 082JSE006, 008 | Metallurgical coal | Sedimentary | A, RC (4858 m, 12 holes) | SE |
| Cariboo Gold Quartz | International Wayside Gold Mines Ltd | 093H 019 | Au | Vein; Replacement | A, G, GC, DD (4518 m, 26 holes) | C |
| Century Limestone | Doublestar Resources Ltd | (92E/10E) | limestone | IM | GC, MAG, DD(3000 m planned) | SW |
| Chica / Chona | Amarc Resources Ltd | | Au-Cu | Calc-alkalic Porphyry | A, IP, DD (960 m) | C |
| Congress | Levon Resources Ltd | 92JNE029, 131, 132, 133 | Au, Ag, Cu, Sb | Mesothermal Vein | DD (1061 m); TR, MS, GC | SC |
| Copper Creek | Firesteel Resources Inc | 104J 035 | Cu, Au | Porphyry | TR (509 m); DD (1524 m) | NW |
| Corey | Kennch Eskay Mining Corp | 104B 011, 355 | Au, Ag | Epithermal VMS | DD (6901 m) | NW |
| CR | Manson Creek Resources Ltd | 93L 007, 269 | Cu, Mo | Porphyry | GC, DD (1580 m) | NW |
| Craigmont | Christopher James Gold Corp | 92ISE035 | Cu | Skarn | GP, DD (~3000 m) | SC |
| Dauntless | SYMC Resources Ltd | 092F 168 | Cu-Ag | Vein | DD(1062 m, 15 holes); TR(400 m, 15); A (2.5 km) | SW |
| Davidson (Yorke-Hardy) | Blue Pearl Mining | 93L 110 | Mo, W | Porphyry | EN; UG (rehab) | NW |
| Del Norte | Sabina Resources Limited | 104A 176, 161 | Au, Ag | Epithermal Vein | AB-EM, DD (1400 m) | NW |
| Dude | Pathfinder Resources Ltd | 092F 276 | Cu+Mo+Au | Porphyry | GC, RC(1270 m, 6 holes) | SW |
| Dusty Mac | Ecstall Mining Corp | 82ESW078 | Au, Ag | Epithermal Vein | GP, DD (1400 m) | SC |
| Elizabeth | J-Pacific Gold Inc | 92O 012 | Au, Ag, Cu, Mo | Mesothermal Vein | DD (~2788 m, 19 holes) | SC |
| Elk (Siwash North) | Almaden Minerals Ltd | 92HNE096 | Au, Ag | Mesothermal Vein | DD (8395 m, 36 holes) | SC |
| Eskay Creek | Barrick Gold Corp | 104B 008 | Au, Ag | Epithermal VMS | UG-DD, 16 000 m | NW |
| Extra High (Kamad 7) | Bronx Ventures Inc | 82M 277 | Au, Ag, Cu, Pb Zn | Kuroko-type VMS | TR; DD (~1700 m) | SC |
| Falling Creek | Kennecott Canada Exploration Ltd | 093O 034-036 | Coking and PCI Coal | Sedimentary | G, RD (2349 m, 12 holes), GP, CQ | NE |
| Five Cabin | Hillsborough Resources Ltd | | Coking Coal | Sedimentary | A, G, TR, RD & DD (14 430 m, 121 holes), GP, CQ, PF, EN | NE |
| Foremore | Roca Mines Inc | 104G 148 | Cu, Zn, Ag, Au | VMS | AB-EM / MG, DD (2200 m) | NW |
| Fran | Yankee Hat Industries Corp | 093N 207 | Au-Cu | Alkalic Porphyry | A, P, G, GC, DD (3028 m, 16 holes) | C |
| Galore Creek | NovaGold Resources Inc | 104G 090, 092, 095, 099 | Cu, Au | Skarn, Alkalic Porphyry | 3D-IP; DD (54 409 m); DD-MS (3496 m); GD (5330 m); EN | NW |
| Getty North | Getty Copper Inc | 92INE038 | Cu | Calc-alkalic porphyry | G, MS | SC |
| Gibraltar | Taseko Mines Ltd | 093B 005-008, 011-012, 051, 061-063 | Cu-Mo | Calc-alkalic Porphyry | CD & DD (6990 m, 40 holes) | C |
| Golden Eagle | Signet Minerals Inc | 104M 057, 075, 085 | Au | Epithermal Vein; Skarn | GP; DD (733 m) | NW |
| Goodrich (Central South) | First Coal Corp | 093O 034 | Coking and PCI Coal | Sedimentary | A, G, RD & DD (10 750 m, 65 holes) | NE |
| Granduc | Bell Resources Corp | 104B 021 | Cu, Ag, Au | VMS | G, AB EM/MG, DD (2090 m, 5 holes) | NW |
| Grouse Creek | Golden Cariboo Resources Ltd | 093H 003, 008 | Au | Vein; Replacement | A, DD (6252 m, 44 holes) | C |

## TABLE 3. CONTINUED

| Property | Operator | Minfile (NTS) | Commodity | Deposit Type | Work Program | Region |
|---|---|---|---|---|---|---|
| Hermann | Western Canadian Coal Corp | | Coking Coal | Sedimentary | A; G; RD & DD (5511 m, 29 holes); GP; CQ; PF | NE |
| Highmont East | Highland Valley Copper | 92ISE013 | Cu, Mo | Porphyry | DD (~1000 m); FS; ES; BK | SC |
| Huckleberry | Huckleberry Mines Ltd | 93E 037 | Cu, Mo | Porphyry | DD (6388 m, 33 holes) | NW |
| Hushamu | Lumina Resource Corp | 092L 240 | Cu-Au-Mo+Ag | Porphyry | AB-MG,EM (2600 line km); P; G; GC; DD (4600 m, 22 holes) | SW |
| Iron Lake | Argent Resources Ltd / Eastfield Resources Ltd | 92P 132 | Cu, Au, Pd, Pt | Alkalic Porphyry | GP; DD (505 m, 4 holes) | SC |
| Iron Range | Eagle Plains Resources Ltd | 082FSE014-028 | Pb, An, Ag, Cu, Au | IOCG, Sedex | G, GC, DD (945 m, 4 holes) | SE |
| Iron Ross | Homegold Resources Ltd | 092K 043 | Magnetite | IM | DD (250 m, 2 holes); BU (4800 tonnes) | SW |
| Isintok Lake | Jasper Mining Corp | 82ENW093 | Ag, Cu, Mo | Porphyry | AB GP; DD (~2000 m, 4 holes) | SC |
| Jersey-Emerald | Sultan Minerals Inc | 082FSW009-011, 218 | Mo, W | Porphyry Mo | DD (2500 m, 16 holes) | SE |
| Jeune Landing | Sechelt Industrial Minerals Corp | (92L/06) | Dolomite | IM | DD (300 m, 7 holes); A (150 m); hydrographic survey | SW |
| Kemess - Bear | Northgate Minerals Corporation | | Au-Cu | Calc-alkalic Porphyry | A; G; DD (5786 m, 17 holes) | C |
| Kemess North area | Northgate Minerals Corporation | 094E 021 | Au-Cu | Calc-alkalic Porphyry | A; G; DD (10,372 m, 23 holes); FS | C |
| Kerr-Sulphurets | Falconbridge Limited | 104B 103, 173, 182, 285 | Cu, Au | Porphyry | G; DD (4092 m, 16 holes) | NW |
| Ketchan | Copper Belt Resources Ltd | 92HNE126, 037, 131, 115, 118, 163, 140 | Cu, Au, Ag | Alkalic Porphyry | DD (1210 m, 10 holes); G; GP | SC |
| Kinaskan (GJ) | Canadian Gold Hunter Corp | 104G 034, 086 | Cu, Au | Porphyry | G; DD (16 394 m, 56 holes) | NW |
| Klappan | Fortune Minerals Limited | 104H 021 | Anthracite | Coal | EN; DD (2144 m); RC (951 m) | NW |
| Kutcho Creek | Western Keltic Mines Inc | 104I 060 | Cu, Zn, Ag, Au | VMS | DD (7372 m, 20 holes) | NW |
| Lac La Hache (Ann North, Sout, Peach etc) | GWR Resources Inc | 92P 002, 115, 034 | Cu, Au, Ag, magnetite | Alkalic Porphyry | AB GP; DD (1788.4 m, 8 holes) | SC |
| LCR | Eagle Plains Resources Ltd | 103I 021 | Mo, Cu, Au | Porphyry | DD (2428 m, 20 holes) | NW |
| Lexington | Merit Mining Corp | 082ESE041, 042 | Au, Cu | Mesothermal vein, polymetallic vein | IP; MG; DD (3195 m, 19 holes) | SE |
| LJ | Selkirk Metals Corp | 82M 264 | Zn, Pb, Cu, Au, Ag | Besshi VMS | D (769.79 m, 3 holes) | SC |
| Lodgepole | Cline Mining Corporation | 082GSE028 | PCI coal | Sedimentary | EN; FS; DD (1205 m) | SE |
| Lorraine - Jajay | Teck Cominco Limited | 093N 002, 066, 224 | Cu-Au | Alkalic Porphyry | G; GC; IP; DD (3704 m, 17 holes) | C |
| Lossan | Cline Mining Corporation | 093O 031 | Coking and PCI Coal | Sedimentary | UG-BU (10 t); RD (4281 m, 28 holes); GP; CQ; PF; F; EN | NE |
| Lucky Ship | New Cantech Ventures Inc | 093L 053 | Mo | Porphyry | IP; DD (3804 m, 26 holes) | NW |
| Lustdust | Alpha Gold Corp | 093N 008-009 | Au-Ag-Cu-Zn-Pb | Skarn, Manto, Vein | A; TR; DD (5153 m, 16 holes) | C |
| Macktush | SYMC Resources Ltd | 092F 012 | Au-Ag-Cu±Mo | Porphyry, Vein | DD (1500 m, 20 holes); A (1.4 km) | SW |
| MAX | Roca Mines Inc/FortyTwo Metals Inc | 082KNW003, 004 | Mo | Porphyry | DD (3101 m, 21 holes) | SE |
| Max (Kamad) | Amarc Resources Ltd | 82M025 | Au, Ag, Zn, Pb, Cu | Kuroko-type VMS | G; DD (3718 m, 16 holes) | SC |
| Merry Widow | Grande Portage Resources Ltd | 092L 044 | Au-Ag+Cu+Co | Skarn | IP (55 line km) | SW |
| Mineral Creek | Bitterroot Resources Ltd | 092F 079, 331 | Au-Ag | Vein | DD (2000 m, 15 holes) | SW |
| Morrison | Pacific Booker Minerals Inc | 093M 007 | Cu, Au | Porphyry | EN; DD (~1700 m, 8 holes); MS | NW |
| Mount Polley | Imperial Metals Corporation | 093A 008, 164 | Cu-Au-Ag | Alkalic Porphyry | G; PD; DD (39 495 m, 98 holes); FS | C |
| Muskwa | Twenty Seven Capital Corp | 094K 054 | Cu | IOCG | AB-MG; P; G; GC; DD (420 m, 12 holes) | C |
| Myra Falls mine | NVI Mining Ltd (Breakwater Resources Ltd) | 92F 330, 071, 072, 073 | Cu-Zn-Au-Ag-Pb | VMS | DD (36 000 m); UG (800m) | SW |
| Nechako Gold (Bob) | Endurance Gold Corp | 093B 054 | Au-Ag | Epithermal Vein | A; G; P; GC; DD (422 m, 3 holes) | C |
| New Afton | New Gold Inc | 92INE023 | Cu, Au, Pd, Ag | Alkalic Porphyry | UG; FS; DD (~20 000 m); AB GP | SC |
| Newmac | Newmac Resources Inc | 92N 030, 054, 055 | Cu, Ag, Au | Porphyry, vein | DD (~1000 m, 5 holes) | SC |
| New Polaris | Canarc Resource Corp | 104K 003 | Au | Mesothermal Vein | DD (~2357 m, 9 holes) | NW |
| Nithi Mountain | Leeward Capital Corp | 093F 006-016 | Mo | Calc-alkalic Porphyry | A; G; DD (~6000 m) | C |
| OK | Goldrush Resources Ltd | 092K 008, 057, 155 | Cu-Mo | Porphyry | DD (968 m, 6 holes) | SW |
| Omega | Belcourt Saxon Coal Limited Partnership | 093I 014 | Coking Coal | Sedimentary | G; RD & DD (1986 m); GP; CQ | NE |
| Oskinka | Lysander Minerals Corporation | 094C 089 | Au-Cu | Alkalic Porphyry | A; GC; IP; DD (1447 m, 8 holes) | C |

## TABLE 3. CONTINUED

| Property | Operator | Minfile (NTS) | Commodity | Deposit Type | Work Program | Region |
|---|---|---|---|---|---|---|
| Pakk | Klondike Gold Corporation/Golden Chalice Resources | 082FNE115, 117 | Zn, Pb, Ag | Sedex | DD (706 m, 1 hole) | SE |
| Panda | Klondike Gold Corporation | 082FSE110 | Zn, Pb, Ag | Sedex | DD (1572 m, 1 hole) | SE |
| Panorama Ridge | Goldcliff Resource Corp | 82ESW052, 259 | Au | Skarn | DD (~1200 m); TR | SC |
| Pearson (Bugaboo, Reko) | Emerald Fields Resource Corp | 092C 022, 191 | PGE, Ni, Cu | Mag, skarn | AB-GP; DD (460 m, 3 holes at Bugaboo); DD (300 m, 4 holes at Reko) | SW |
| Pit | Finlay Minerals Ltd | 094E 029, 083, 213, 216 | Au-Cu | Calc-alkalic Porphyry; Epithermal Vein | A; P; G; DD (3088 m, 12 holes) | C |
| Pine | Cascadero Copper Corp | 094E 016, 045, 047-048, 082, 237 | Au-Cu (+/- Mo) | Calc-alkalic Porphyry | A; G; DD (3980 m, 17 holes) | C |
| Pine Pass | Falls Mountain Coal Inc (Pine Valley Mining Corporation) | 093O 007 | Coking and PCI Coal | Sedimentary | A; G; TR; RD; GP; EN; DD (16 309 m) | NE |
| Poplar | Aumega Discoveries Limited | 93L 239 | Cu, Mo, Au | Porphyry | DD (~3000 m) | NW |
| Prospect Valley (PV, NIC & RM) | Cons. Spire Ventures Ltd / Almaden Minerals Ltd | none | Au, Ag | Epithermal Vein | GC; P; TR | SC |
| QCM | Canadian Gold Hunter Corp | 093N 200 | Au | Mesothermal Vein | A; DD (1802 m, 9 holes) | C |
| QR | Cross Lake Minerals Ltd | 093A 121 | Au | Skarn | DD (1972 m, 9 holes); PF | C |
| Quinsam Coal mine | Quinsam Coal Corp (Hillsborough Resources Ltd) | 092F 319 | Thermal coal | Sedimentary | RD (1200 m, 6 holes) | SW |
| Quintette-Babcock Window | Elk Valley Coal Partnership | 093I 011 | Coking Coal | Sedimentary | A; G; RD (12 109 m, 58 holes); GP | NE |
| Rabbit South and North | Global Hunter Corp | 92INE071, 147, 130, 114 | Mo, Cu, Au | Porphyry | DD (2390 m) | SC |
| Rain (Sorcerer) | Orphan Boy Resources Inc | 82M 156 | Cu, Zn, Pb, Au, Ag, Mo, W | VMS; Skarn; Porphyry; Vein | DD (~200 m, 1 hole) | SC |
| Ratena | Happy Creek Minerals Ltd | 92ISE092, 150, 060 | Cu, Mo | Calc-alkalic porphyry | DD (341 m, 2 holes) | SC |
| RDN | Northgate Minerals Corp | 104G 144 | Au, Ag, Pb, Zn | VMS | G; DD (1470 m) | NW |
| Red Chris | bcMetals Corporation | 104H 005 | Cu, Au | Porphyry | EN; FS | NW |
| Red Hill | Avalon Ventures Ltd | 92INW042 | Cu, Zn, Au, Ag | VMS | DD (1279 m, 6 hills); G; DH GP | SC |
| Ruby Creek | Adanac Molybdenum Corp | 104N 052 | Mo | Porphyry | EN; GD; CD (4984 m, 19 holes) | NW |
| Ruddock Creek | Selkirk Metals Corp / Doublestar Resources Ltd | 82M 082, 83 | Zn, Pb, Ag | Stratiform | D; AB-EM; DD (2500 m, 4 holes) | SC |
| Sandon Camp | Klondike Silver Corporation | 082FNW043 | Ag, Pb, Zn | Polymetallic vein | GC; TR; DD (676 m) | SE |
| Saxon East | Belcourt Saxon Coal Limited Partnership | 093I 016 | Coking Coal | Sedimentary | G; RD & DD (1986 m); GP; CQ | NE |
| Saxon South | Belcourt Saxon Coal Limited Partnership | 093I 016 | Coking Coal | Sedimentary | G; RD & DD (2578 m); GP; CQ | NE |
| Schaft Creek | Copper Fox Metals Inc | 104G 015 | Cu, Mo, Au | Porphyry | EN; DD (3161 m, 15 holes); MS | NW |
| Sechelt Carbonate | Pan Pacific Aggregates Ltd | 092GNW031, 052 | Dolomite and other | IM | A (3.1 km road); DD(5-6000 m, 30 holes) | SW |
| Seel | Gold Reach Resources Ltd | 93E 105 | Cu, Au | Porphyry | DD (~3000 m) | NW |
| Seneca | Carat Exploration Inc | 092HSW013, 039, 165 | Zn-Cu-Pb-Ag-Au | VMS | G; P; GC; IP/EM (25 line km); AB-EM (325 line km); DD (3700 m) | SW |
| Shasta | Sable Resources Ltd | 094E 050 | Ag-Au | Epithermal Vein | IP; DD (915 m, 11 holes) | C |
| Silver Coin | Pinnacle Mines Ltd | 104B 095 | Au, Ag, Pb, Zn | Vein | DD (5000 m) | NW |
| Skoonka (Sam) | Strongbow Exploration Inc / Almaden Minerals Ltd | 92ISW104 | Au, Ag | Epithermal Vein | DD (1257 m, 11 holes) | SC |
| Spanish Mountain | Skygold Ventures Ltd / Wildrose Resources | 093A 043 | Au | Mesothermal Vein | A; RC & DD (11 123 m, 65 holes) | C |
| Sphinx | Eagle Plains Resources Ltd | 082FNE004, 094, 095 | Mo, W | Porphyry Mo | G; GC; A; DD (3330 m, 14 holes) | SE |
| Sullivan Deeps | Stikine Gold Corporation | | Zn, Pb, Ag | Sedex | DD (2750 m, 1 hole) | SE |
| Summit Lake | Tenajon Resources Corp | 104B 034 | Au | Intrusion-related vein | DD (2666 m) | NW |
| Summit/Oldtimer | Auramex Resource Corp | 082FSW081, 313 | Au | Polymetallic vein | DD (2306 m, 25 holes) | SE |
| Tadpole | Goldrea Resource Corp / Molycor Gold Corp | 82LSW009 | Mo | Porphyry | DD (1146 m, 10 holes) | SC |
| Taurus II | Cusac Gold Mines Ltd | 104P 016, 077 | Au | Orogenic gold | DD (2444 m, 18 holes) | NW |
| Thorn | Cangold Limited & Rimfire Minerals Corp | 104K 031 | Au, Ag, Cu | High sulfidation vein | G; IP; DD (656 m, 5 holes) | NW |
| Tide | Serengeti Resources Inc | 104B 129 | Au, Ag | Vein | G; AB-EM / MG; DD (967 m, 8 holes) | NW |
| Trend - Roman Mountain | NEMI Northern Energy & Mining Inc | 093I 030 | Coking Coal | Sedimentary | A; G; RD (~3000 m, 23 holes); GP | NE |
| Tulsequah Chief | Redfern Resources Ltd | 104K 002 | Cu, Zn, Ag, Au | VMS | FS; R | NW |
| Turnagain | Hard Creek Nickel Corp | 104I 051, 119, 120 | Ni, Pd, Pt | Magmatic | DD (7143 m, 19 holes) | NW |
| Upper Fir & Bone Cr | Commerce Resources Corp | 83D 035, 036 | Ta, Nb, U, Phosphate | Carbonatite | DD (500 m, 8 holes) | SC |

## TABLE 3. CONTINUED

| Property | Operator | Minfile (NTS) | Commodity | Deposit Type | Work Program | Region |
|---|---|---|---|---|---|---|
| Vowell Creek | Jasper Mining Corporation | 082KNE009 | Ag, Pb, Zn, Au, graphite | Polymetallic vein, sedex | AB-MG, AB-EM; DD (1224 m, 8 holes) | SE |
| Wasi Creek | Bard Ventures Ltd / Selkirk Minerals Corp | 094C 024 | Zn-Pb-Ag | Replacement | P, G, EM; DD (1054 m, 7 holes) | C |
| WCL | Western Canada Limestone Ltd | 82LSW112 | Limestone | Industrial Mineral | MS, FS | SC |
| Westport | Williams Creek Explorations Limited | 093H 027, 034 | Au | Mesothermal Vein | DD (1460 m, 6 holes) | C |
| Whipsaw | Canfleur Mining Inc | 92HSE102 | Cu, Mo, Au, Ag | Porphyry | DD (1220 m, 5 holes) | SC |
| Wolverine - Perry Creek | Western Canadian Coal Corp | 093P 015, 025 | Coking Coal | Sedimentary | OP-BU (20 t), CQ, EN | NE |
| Woodjam | Fjordland Exploration Inc | 093A 078, 124 | Au-Cu | Alkalic Porphyry | A, G, DD & RC (2925 m, 16 holes) | C |

A = access; trail, road construction on claims; AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; AB-RD = airborne radiometrics; BU (X tonnes) = bulk sample (weight in tonnes if known); CD = condemnation drilling; CQ = coal quality testing; CT = carbonization test (coal); DD (Xm) = diamond drilling totaling X metres; EN = environmental baseline studies/monitoring, remediation work; FS = feasibility studies; G = geology, mapping, etc; GC = geochemical sampling (rock, soil, silt, etc); GD = geotech drilling; GP = geophysics (general); IP = Induced Polarization; 3D-IP; MG = magnetics; MK = marketing-primarily for industrial mineral products; MS = metallurgical studies; OB = overburden drilling; P = prospecting; PD = percussion drilling; PF = pre-feasibility studies; R = reclamation; RC = reverse circulation drilling; TR = trenching; UG (X m) = X metres of underground development; UG-BU = underground bulk sample; OP-BU = open-pit bulk sample; UT = UTEM; VLF; WT = washability test (coal)

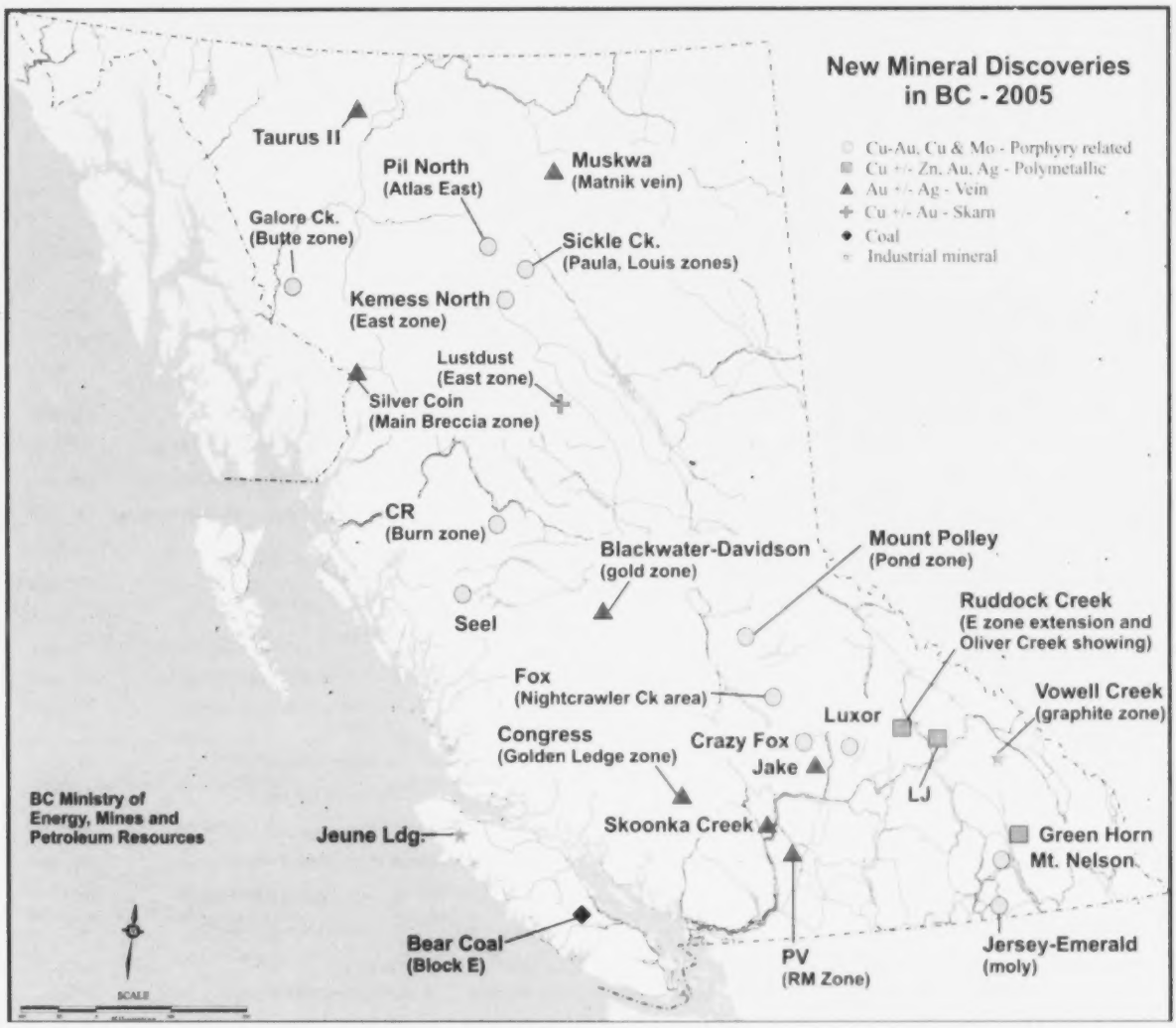


Figure 10. New mineral discoveries in British Columbia in 2005.

Cominco, under an option agreement with Eastfield Resources and Lysander Minerals, carried out property-wide exploration, including drilling, on the large **Lorraine** copper-gold property, northwest of Fort St. James. Drilling intersected a western and southern extension to the Main zone (e.g. 1.19% Cu over 30 metres). Lysander drilled its **Osilinka-Cat** porphyry gold-copper prospect, which adjoins the Lorraine property on the north. Several other properties were evaluated, including **Chica** and **Chona** (Amarc) and **Fran** (Yankee Hat Industries).

Just southeast of the Endako mine, Leeward Capital completed a large drilling program on its **Nithi Mountain** molybdenum deposit. A resource calculation is in progress.

In the Nechako Plateau area, exploration targeted epithermal gold-silver prospects, including **3Ts** and **Blackwater-Davidson** (Silver Quest Resources) and **Nechako Gold** (Endurance Gold).

Skygold Resources, under an option agreement with Wildrose Resources, drilled their sediment-hosted **Spanish Mountain** bulk tonnage gold target near Likely. Mineralization in the favourable argillites and metasiltstones has been traced over 1200 metres in length and greater than 250 metres across its axis. Significant results have been reported (e.g. 94.5 metres grading 1.81 g/t Au, including 22.9 metres grading 5.04 g/t Au).

Photo 10. Looking northerly over Spanish Mountain.

South of the Mount Polley mine, Fjordland Exploration (under a joint venture agreement with Wildrose Resources) continued to drill potentially significant gold-copper mineralization in the Megabuck and Takom zones on the **Woodjam** property. A late-season drilling program yielded a 91.7-metre intersection grading 1 g/t Au and 0.22% Cu on the eastern portion of the Megabuck zone.

In the Wells-Barkerville gold belt, drilling evaluated several high-grade mesothermal vein and/or replacement style deposits, including **Bonanza Ledge-Cariboo Gold Quartz** (International Wayside Gold), **Grouse Creek** (Golden Caribou), **Mosquito Creek Gold** (Island Mountain Gold) and **Westport** (Williams Creek Exploration).

### *Kootenays - Major Exploration Projects*

Major molybdenum exploration drilling programs include **Jersey Emerald** (Sultan Minerals) southeast of Salmo, **Sphinx** (Eagle Plains Resources) southeast of Crawford Bay, **Jazz (Stewart)** (Emgold) northwest of Salmo and **Novelty** (Golden Chalice) at Rossland.

Exploration spending on 9 coal projects totalled approximately $5.1 million, including some 23 400 metres of drilling. Exploration was conducted on or adjacent to the **Elkview**, **Fording River** and **Line Creek (Burnt Ridge)** mines, as well as on the **Marten-Wheeler** property 15 kilometres south of Sparwood, on the **Bingay Creek** deposit, 30 kilometres north of Elkford and on the **Lodgepole** deposit, southeast of Fernie by Cline Mining.

Northwest of Kimberley, Stikine Gold Corp drilled a second deep ( 2736 metres) hole following up on its discovery of Sullivan-style mineralization on its **Sullivan Deeps** project in 2004. A third hole is planned for 2006. Klondike Gold and Golden Chalice targeted the Sullivan horizon at a few locations (*e.g.* **Panda,. Payday** and **Pakk**) in the southern Purcell Mountains. Eagle Plains carried out drilling on its Iron Range sedex property, northeast of Creston.

### *South-Central - Major Exploration Projects*

In the Revelstoke area, Selkirk Metals completed drilling programs on its Kneb, LJ and Ruddock Creek zinc-lead-silver sedex properties. At **Ruddock Creek**, it successfully discovered the faulted-off western extension of the E zone mineralization. It also discovered high-grade zinc-lead-silver mineralization at surface in the Oliver Creek valley, approximately 5 kilometres along the projected strike of the E zone mineralization. At **LJ**, it successfully discovered the load source of several high-grade boulders. Near Barriere, Amarc drilled its stratiform, base-metal sulphide **Max (Kamad)** deposit.

Nine kilometres southeast of the Afton mine, Abacus Minerals conducted a deep drilling program for copper and gold below its **Ajax West** pit. Drilling results confirm the continuity of mineralization to a vertical depth of at least 300 metres below the existing pit. It also completed a deal with Afton Operating Company Ltd to acquire its existing infrastructure in the area, including the mill and tailings impoundment facilities.

In the Okanagan region, Almaden Minerals completed another large drilling program on its past-producing **Elk** gold-silver property west of Peachland. It plans to produce a new resource estimate, and will examine the feasibility of re-opening the mine. In the Merritt area, Almaden explored several new epithermal

gold-silver showings, including **Prospect Valley (RM zone)** along with its joint venture partner, Consolidated Spire Minerals, and the **Merit** property. Strongbow Resources, under an option agreement with Almaden, drilled the newly discovered **Skoonka Creek** epithermal gold target. These projects are a few within the emerging Spences Bridge epithermal gold belt between Merritt and Lillooet.

Goldcliff Resources continued to drill its **Panorama Ridge** auriferous skarn property, adjacent to the former Hedley gold mine. Christopher James Gold drilled the former **Craigmont** copper skarn mine at Merritt.

Photo 11. Looking southerly over western extension on E zone, Ruddock Creek.

Photo 12. Looking easterly over the JJ showing, Skoonka Creek property, northeast of Lytton.

### *Southwest - Major Exploration Projects*

North Pacific Alloys Limited continued post feasibility study work on its **Cogburn** magnesium project near Hope. Northeast of Harrison Hot Springs, Pacific Coast Nickel reported significant nickel-copper- PGE mineralization its **Big Nic** and **Katt/Sable** properties. Eagle Plains and Northern Continental drilled their **Harrison Lake Gold (Abo)** gold-silver property, where mineralization is hosted within quartz diorite stocks and breccias. West of Harrison Lake, Carat Exploration completed airborne and ground geophysical surveys and follow-up drilling on its **Seneca** VMS polymetallic deposit.

Near Powell River, Goldrush Resources drilled its OK porphyry copper-molybdenum deposit. On Texada Island, Pathfinder Resources drilled the Dude porphyry copper-molybdenum target.

Lumina Resources consolidated a large tenure in the North Island copper-gold belt, which includes the **Hushamu** deposit with 231 million tonnes grading 0.28% Cu and 0.31 g/t Au, on Vancouver Island. It carried out airborne and ground geophysical surveys and follow-up drilling on this deposit. Near Port Alice, Sechelt Industrial Minerals explored the **Jeune Landing** dolomite prospect and planned a 10 000-tonne bulk sample. Near Gold River, Doublestar Resources drilled its **Century** limestone property.

Compliance Energy tested the **Bear Coal** property, in the historic Cumberland coalfield, which hosts the Hamilton Lake resource of approximately 11 million tonnes. The company discovered a new coal section on Block E. The company is also perusing other coal projects in the area.

Near Port Alberni, Bitterroot Resources drilled its **Mineral Creek** (Debbie and 900 zones) gold deposits. SYMC Resources drilled its **Dauntless** and **Macktush** copper-silver-gold properties. Near Port Renfrew, Emerald Fields drilled its **Bugaboo** and **Reko** nickel-copper-PGE prospects.

## BRITISH COLUMBIA EXPLORATION AND MINING INITIATIVES

During 2005, the Government of British Columbia continued a number of measures to assist mineral resource planning, exploration and development, including the release of the provincial Mining Plan.

- In early January 2005, the comprehensive *British Columbia Mining Plan* was released outlining actions to support a thriving, globally competitive, safe and environmentally-responsible exploration and mining sectors that will significantly benefit British Columbians.
- The *British Columbia Mining Exploration Tax Credit Program* provides a refundable 20 percent tax credit towards BC taxes. This program was extended another 10 years to December 31, 2016. The combined federal and BC Flow Through Shares tax credit programs (referred to as Super Flow Through Shares) were scheduled to end on December 31, 2005, with look back provisions for mineral exploration expenditures during 2006.
- Mineral Titles Online, an internet-based mineral tenure system, was instituted on January 12, 2005.

Within the first few days, the equivalent number of tenure units acquired equaled the total number for 2004, and the total mineral tenures for 2005 were forecast to increase fourfold over 2004.

- Geoscience surveys were completed in the Canim Lake, Eskay Creek (Bowser Basin rim), Port McNeil, Terrace and Toodoggone areas. Economic geology studies were also carried out on porphyry copper deposits, coal, diamonds and industrial minerals (*see* Figure 11).
- Regional geochemical survey data was released for the Bowser River (NTS 104A) and Spatsizi (NTS 104H) area
- MapPlace, MINFILE, CoalFile and Assessment Report databases were significantly upgraded and expanded, and made more accessible to clients: www.em.gov.bc.ca/geology.
- Staff completed marketing projects in Vancouver and Toronto to attract global mineral industry investment to British Columbia. Numerous offshore Trade delegations met with government officials in Vancouver and Victoria, regarding the acquisition of a variety of projects and their products.
- Over the past year the BC Geological Survey published Geological Fieldwork 2005, Exploration and Mining in British Columbia 2005, 18 Open File maps and reports, 3 Geoscience Maps, 25 GeoFile maps, reports and data and 3 Information Circulars. One of the highlight products this year has been the new, 1:250 000-scale, digital geological map of the Province – the first lithology-based map of the Province in over 25 years.

## MINERAL EXPLORATION AND DEVELOPMENT OUTLOOK FOR 2006

The positive trends in exploration spending, drilling programs, successes at advanced exploration projects, and the number of significant property acquisitions all bode well for a very busy 2006 exploration season in British Columbia. Coal, gold, open-pit copper, high-grade molybdenum, and bonanza-gold targets continue to be a focus of exploration throughout the province.

Most metal prices are expected to continue at high levels through 2006. Coal, gold, copper, molybdenum, zinc, lead and platinum are the main commodities currently attracting mineral exploration attention.

The **Trend** and **Wolverine-Perry Creek** coal projects, and the **MAX** molybdenum project, are expected to open in 2006. Many advanced exploration projects expect to have a feasibility study completed in 2006 (*e.g.* **Davidson, Galore Creek, Mt. Milligan, New Afton** and **Schaft Creek**). The revival of coal exploration and developments, particularly those in the northeast, continue to help revitalize the Ridley Island terminal near Prince Rupert.

The strengthening of the international coal markets is expected to continue. Production, development and exploration activities in the northeast (*e.g.* **Brule, Perry Creek, Trend, Goodrich-Central, Falling Creek** and **Lossan**) and southeast (**Bingay Creek and Lodgepole**) will continue to increase. In the northwest, the **Mount Klappan** anthracite coal deposit is being considered for development.

The potential for new, high-grade **Eskay Creek**-style, Au-Ag occurrences continues to attract attention, particularly in the northwest. With the strong zinc and lead prices, the search for Sullivan-type deposits in the southeast and the sedex deposits in the Gataga belt in the northeast is expected to intensify.

Industrial minerals production continues to grow steadily through developing additional markets and mining more commodities. In 2006, it is anticipated that industrial clays, limestone and aggregate sales will improve. Sulphur sales are expected to be particularly strong again next year.

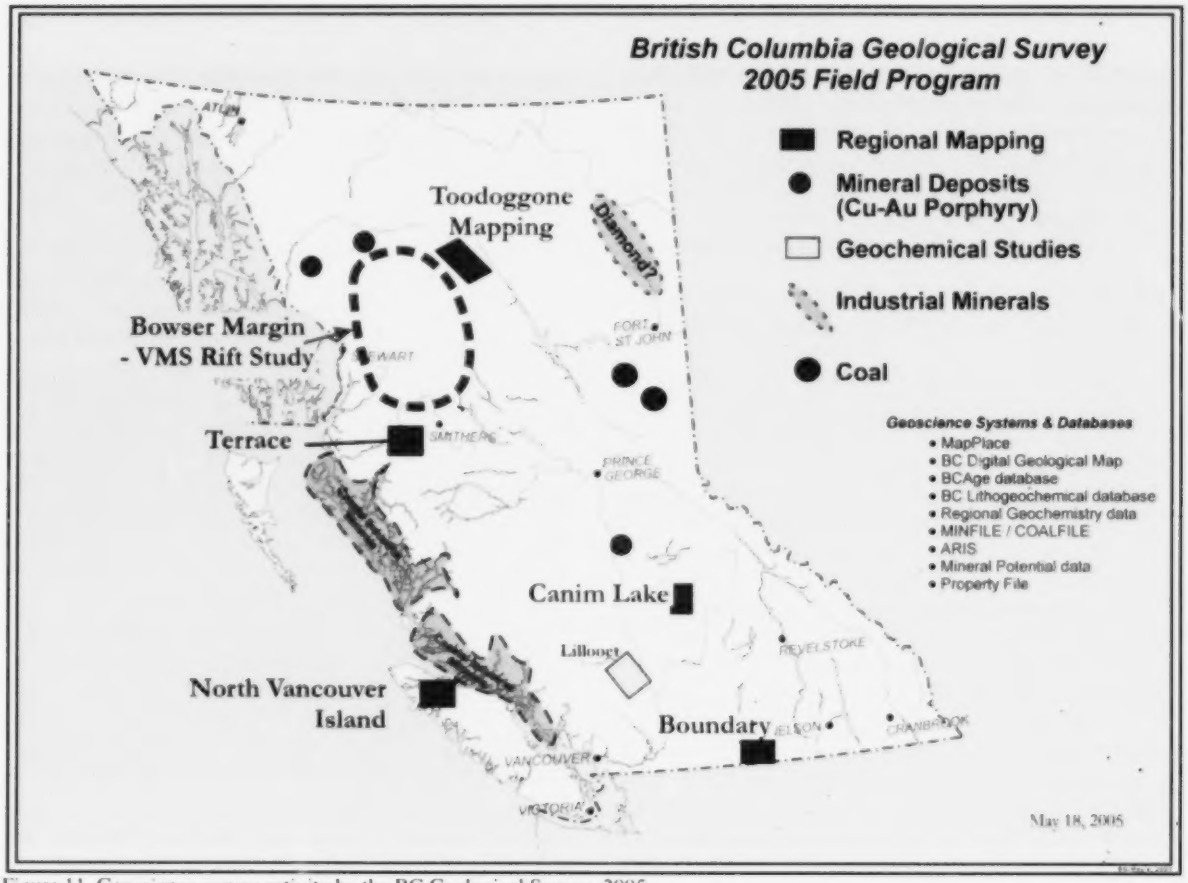


Figure 11. Geoscience survey activity by the BC Geological Survey, 2005.

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# NORTHWEST REGION

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Regional Geologist, Smithers

## SUMMARY AND TRENDS

Mineral exploration activity in 2005 increased significantly for the third successive year. Exploration spending in the Northwest soared to $99.5 million, an 80% increase over 2004 (see Figure 2.1). Exploration drilling rose to about 197 000 metres (see Figure 2.2) which demonstrates increased work on advanced properties. There were 52 large projects, 51 of which included drilling. Robust prices for copper, molybdenum, gold and coal caused many dormant prospects to be reactivated. Three major mines continue to operate in the region; two more projects hold Environmental Assessment certificates allowing development of new mines, and a further seven are in the Environmental Assessment process.

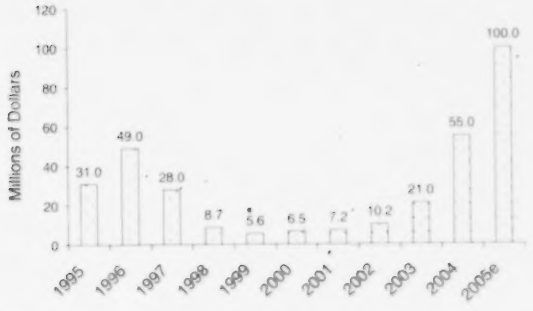


Figure 2.1. Exploration expenditures in Northwest British Columbia.

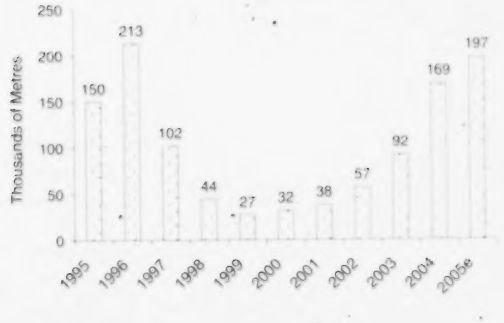


Figure 2.2. Exploration drilling in Northwest British Columbia.

The Endako open pit molybdenum mine celebrated its 40th year of operation in 2005. The low-cost mine, operated by Thompson Creek Mining, completed a large waste rock-stripping program to access more ore and prolong mine life. Gold and silver production from the rich Eskay Creek mine decreased. Owned by Barrick Gold Corporation, ore reserves will be exhausted in early 2007. Copper production from the Huckleberry open pit copper mine increased but Imperial Metals Corp and its partners chose not to mine an extension of the Main zone. With just two years of reserves, Huckleberry is scheduled to close in 2007. Ore reserves and forecast 2005 production for all the mines are shown in Table 2.1.

Highlights of exploration and pre-development work include

- Red Chris received an Environmental Assessment (EA) certificate for a 30 000 tonne per day open pit copper-gold mine. Subsequently, bcMetals Corporation lobbied for an extension of the BC power grid to enable a development decision.
- Galore Creek porphyry copper-gold project was the largest exploration program in British Columbia; 200 field personnel processed 63 000 metres of core; 'ground-truthed' the preferred "modified" northern access route, and conducted engineering and environmental fieldwork. NovaGold expects to submit the Project Report for a 65 000 tonne per day mine to the Environmental Assessment office in early 2006.
- Davidson molybdenum project restored underground mine services. Blue Pearl Mining aims to develop an underground mine and truck ore to an existing mill. Submission of the EA Project Report is anticipated in the spring of 2006.
- Klappan anthracite coal project lies within the largest undeveloped coalfield in BC. Fortune Minerals collected coal resource and environmental data to prepare the EA Project Report, expected in mid-2006. Rail or road infrastructure must be built to ship the coal to offshore markets.
- Three more mine development proposals are in the EA process: Adanac molybdenum, Kutcho Creek copper-zinc and Morrison copper-gold projects. Adanac Moly Corp, Western Keltic Mines Inc and Pacific Booker Minerals Inc, the respective owners, collected engineering and

**TABLE 2.1. MINE PRODUCTION AND RESERVES, NORTHWEST REGION**

| Mine | Operator | Employment | 2005 Production (Unofficial, approx) | Reserves (effective date) |
|---|---|---|---|---|
| Endako | Thompson Creek Mining Ltd & Sojitz Moly Resources Inc | 240 | 4300 t molybdenum | Endako Pit, 29.1 mt at 0.071% Mo; Denak Pit, 22.7 mt at 0.070% Mo; Stockpile, 22.2 mt at 0.046% Mo (Oct. 1, 2005) |
| Eskay Creek | Barrick Gold Corp | 320 | 5500 kg gold, 290 000 kg silver | 439 901 t at 36.3 g/t Au, 1632 g/t Ag (Jan 1, 2005) |
| Huckleberry | Huckleberry Mines Ltd (50% Imperial Metals Corp) | 230 | 34 000 t copper 250 t molybdenum | 19.4 mt at 0.529% Cu, 0.015% Mo, 0.059 g/t Au, 2.98 g/t Ag (Jan 1, 2005) |
| Fireside | Fireside Minerals Inc | ~25 (seasonal) | 10 000 t barite | Not available |

environmental data. Project Reports are anticipated in the second half of 2006.

- Swamp Point aggregate project of Ascot Resources Ltd. intends to load sand directly onto ocean-going vessels from its site on the Portland Canal. The Project Report for Environmental Assessment was submitted in October.
- Some of many notable exploration successes: Kinaskan, (or GJ) copper-gold project of Canadian Gold Hunter Corp, Kerr-Sulphurets gold-copper project of Falconbridge Limited, CR copper-molybdenum project of Manson Creek Resources Ltd, Homestake Ridge gold-silver project of Bravo Venture Group Inc and the Silver Coin gold project of Pinnacle Mines Ltd.

Table 2.2 lists all exploration projects in the region where expenditures exceeded $100 000 and their locations are shown in Figure 2.3. Porphyry copper-gold was the most sought after deposit type, but porphyry copper-molybdenum prospects also came to be a popular target in 2005. There was a rush to revive long-dormant porphyry molybdenum projects. These generally require new drilling to validate resources under new Security Exchange requirements. Several companies continued to explore for a gold-silver rich VMS deposit like the Eskay Creek mine.

A significant new trend is the proposed development of large sand and gravel pits along the Pacific coast, for shipment of construction aggregate to urban Pacific Rim markets. Looking ahead to 2006, one of the most important factors influencing mineral exploration and development in the region is the decision whether to extend the BC power grid.

## MINES AND QUARRIES

### METAL MINES

The **Eskay Creek** underground gold-silver mine, owned by Barrick Gold Corporation, is forecast to produce 5500 kg of gold and 290 000 kg of silver in 2005. Since start-up in 1995 ore grade has diminished and at the beginning of 2005 the average reserve grade was 36 g/t gold and 1600 g/t silver, see Table 2-1. Mine production is approximately 550 tonnes per day and reserves will be exhausted by early 2007. Historically the mine produced two direct-shipping ore blends, one for the Noranda smelter in Quebec and a second to suit the DOWA smelter in Japan but this very high-grade ore is nearly depleted. Concentrate from the 300 tonne per day (tpd) mill is also shipped to the Noranda smelter. Including contractors, 320 people are employed at Eskay Creek. Mining is by drift-and-fill because of the weak host rock. Eskay Creek employs conventional and mechanized mining methods (Figure 2.4). Aggregate for cemented stope back-fill is extracted from the Iskut River on a seasonal basis, hauled 25 km to the mine site and then mixed with cement prior to placement. The maximum width of stopes in the upper (21B) workings is 2.4 metres and lifts are 2.7 metres. Deeper in the mine, geotechnical conditions allow for slightly larger stopes.

Eskay Creek (MINFILE 104B 008) is a volcanogenic massive sulphide deposit with exceptional gold and silver content and occurs in mudstone and footwall rhyolite at the top of the early Jurassic Hazelton Group. The strataform 21B ore body consists of clastic sphalerite, tetrahedrite – freibergite, boulangerite, other lead-sulphosalts and pyrite in the Contact Mudstone. The 21B zone is rich in gold and silver but also contains high levels of mercury, antimony and arsenic that requires it to be shipped to smelters for treatment. The cut-off grade for shipping ore is 30 g/t gold equivalent. Ore that is treated

## TABLE 2.2. MAJOR EXPLORATION PROJECTS IN NORTHWEST REGION, 2005

| Property | Operator | Minfile | Commodity | Deposit Type | Work Program |
|---|---|---|---|---|---|
| Ajax | Tenajon Resources Corp | 103P 223 | Mo | Porphyry | DD (1165 m) |
| Cassiar Moly | Eveready Resources Corp | 104P 035 | Mo | Porphyry | DD (928 m) |
| Copper Creek | Firesteel Resources Inc | 104J 035 | Cu, Au | Porphyry | TR (509 m); DD (1524 m) |
| Corey | Kennch Eskay Mining Corp | 104B 011, 355 | Au, Ag | Epithermal VMS | DD (6901 m) |
| CR | Manson Creek Resources Ltd | 93L 007, 269 | Cu, Mo | Porphyry | GC; DD (1580 m) |
| Dardanelle | Tradewinds Ventures Inc | 103I 107 | Au | Vein | TR; DD (294 m) |
| Davidson (Yorke-Hardy) | Blue Pearl Mining Ltd | 93L 110 | Mo, W | Porphyry | EN; UG (rehab); DD |
| Del Norte | Sabina Resources Limited | 104A 176, 161 | Au, Ag | Epithermal Vein | AB-EM; DD (1400 m) |
| Eaglehead | Carmax Explorations Ltd | 104I 008 | Cu, Au | Porphyry | Grid; IP; 25 km |
| Eskay Creek | Barrick Gold Corp | 104B 008 | Au, Ag | Epithermal VMS | UG-DD; 16 000 m |
| Eskay | St Andrew Goldfields Limited | 104B 383, 385 | Au, Ag | Epithermal VMS | DD; 2293 m |
| Fireweed | Argentor Resources | 93M 151 | Ag, Pb, Zn | Manto, Replacement | IP |
| Foremore | Roca Mines Inc | 104G 148 | Cu, Zn, Ag, Au | VMS | AB-EM / MG; DD (2200 m) |
| Galore Creek | NovaGold Inc | 104G 090, 092, 095, 099 | Cu, Au | Skarn, Alkalic Porphyry | 3D-IP; DD (54 409 m); DD-MS (3496 m); GD (5330 m); EN |
| Gnat Pass | Bear Claw Capital Corp | 104I 001 | Cu, Au | Alkalic Porphyry | IP |
| Golden Eagle | Signet Minerals Inc | 104M 057, 075, 085 | Au | Epithermal Vein, Skarn | GP; DD (733 m) |
| Granduc | Bell Resources Corp | 104B 021 | Cu, Ag, Au | VMS | G; AB EM/MG; DD (2090 m) |
| Homestake Ridge | Bravo Venture Group Inc | 103P 216, 082, 093 | Au, Ag, Zn | Intrusion-related Gold | G; DD (1644) m |
| Huckleberry | Huckleberry Mines Ltd | 93E 037 | Cu, Mo | Porphyry | DD (6388 m) |
| Kalum | Eagle Plains Resources Ltd | 103I 173 | Au | Intrusion-related Gold | DD (540 m) |
| Kerr-Sulphurets | Falconbridge Limited | 104B 103, 173, 176, 182, 285 | Cu, Au | Porphyry | G; DD (4092 m) |
| Kinaskan (GJ) | Canadian Gold Hunter Corp | 104G 034, 086 | Cu, Au | Porphyry | G; DD (16 394 m) |
| Kizmet | Barrick Gold Corp | 104K 074, 090 | Au | Epithermal | G; GC |
| Klappan | Fortune Minerals Limited | 104H 021 | Anthracite | Coal | EN; DD (2144 m); RC (951 m) |
| Kutcho Creek | Western Keltic Mines Inc | 104I 060 | Cu, Zn, Ag, Au | VMS | DD (7372 m) |
| Lakeview | Cangold Limited | 93L 030 | Cu, Zn, Ag, Au | VMS | DD ( 794 m) |
| LCR | Eagle Plains Resources Ltd | 103I 021 | Mo, Cu, Au | Porphyry | DD (2428 m) |
| Louise Lake | North American Gem Inc | 093L 079 | Cu, Au, Mo | Porphyry | DD (2407) |
| Lucky Ship | New Cantech Ventures Inc | 093L 053 | Mo | Porphyry | IP; DD (3804 m) |
| Morrison | Pacific Booker Minerals Inc | 093M 007 | Cu, Au | Porphyry | EN; DD (~ 1700 m); MS |
| Newmont Lake | Romios Gold Resources Inc | 104B 281, 282 | Au, Cu | Skarn | G; AB-MG; 3D-IP |
| New Polaris | Canarc Resource Corp | 104K 003 | Au | Mesothermal Vein | DD (2357 m) |
| Poly | Lateegra Resources Corp | 104A 026, 128 | Au | Shear Vein | DD (908 m) |
| Poplar | Aumega Discoveries Limited | 93L 239 | Cu, Mo, Au | Porphyry | DD (~3000 m) |
| Porcher Island | Cross Lake Minerals Ltd | 103J 017 | Au | Vein | DD (~1000 m) |
| Ranch | Strategic Metals Ltd | 104O 037 | Ag | Vein, stockwork | G; TR |
| RDN | Northgate Minerals Corp | 104G 144 | Au, Ag, Pb, Zn | VMS | G; DD (1470 m) |
| Red Bird | Torch River Resources Ltd | 93E 026 | Mo | Porphyry | G; GC |
| Red Chris | bcMetals Corporation | 104H 005 | Cu, Au | Porphyry | EN; FS |
| Rox | Goldsource Mines Inc | 93E new | Au, Ag | Epithermal | DD (595 m) |
| Ruby Creek | Adanac Molybdenum Corp | 104N 052 | Mo | Porphyry | EN; GD, CD (4984 m) |
| Sam | CJL Enterprises Ltd | 93L 260 | Ag, Au, Cu | Epithermal | DD (305 m); PD (790 m) |
| Schaft Creek | Copper Fox Metals Inc | 104G 015 | Cu, Mo, Au | Porphyry | EN; DD (3161 m); MS |
| Seel | Gold Reach Resources Ltd | 93E 105 | Cu, Au | Porphyry | DD (1740 m) |
| Silver Coin | Pinnacle Mines Ltd | 104B 095 | Au, Ag, Pb, Zn | Vein | DD |
| Summit Lake | Tenajon Resources Corp | 104B 034 | Au | Intrusion-related vein | DD (2666 m) |

**TABLE 2.2. CONTINUED**

| Property | Operator | Minfile | Commodity | Deposit Type | Work Program |
|---|---|---|---|---|---|
| Swamp Point | Ascot Resources Ltd | 103O 017 | Sand | Aggregate | PD (596 m); EN; FS |
| Taurus | Cusac Gold Mines Ltd | 104P 016, 077 | Au | Orogenic gold | DD (3423 m) |
| Thorn | Cangold Limited & Rimfire Minerals Corp | 104K 031 | Au, Ag, Cu | High sulfidation vein | G; IP; DD (656 m) |
| Tide | Serengeti Resources Inc | 104B 129 | Au, Ag | Intrusion-related | G; AB-EM / MG; DD (967 m) |
| Treasure Mtn | Tradewinds Ventures Inc | 103I 090 | Ag, Cu | Vein | TR; DD (163 m) |
| Tulsequah Chief | Redfern Resources Ltd | 104K 002 | Cu, Zn, Ag, Au | VMS | FS; R |
| Turnagain | Hard Creek Nickel Corp | 104I 051, 119, 120 | Ni, Pd, Pt | Magmatic | DD (7143 m) |
| Tyee | 24/7 Timber Limited | 103I 202 | Dimension Stone | Industrial Mineral | DD (760 m); G; MK |
| Whiting Creek | Huckleberry Mines Limited | 93E 049, 050 | Cu, Mo | Porphyry | DD (1149 m) |
| Williams Gold | Rimfire Minerals Corp | 94E 028, 044 | Cu, Mo, Au | Porphyry | G; IP |
| Yellow Jacket | Prize Mining Corp | 104N 043 | Au | Orogenic gold vein | MG; DD (895 m) |

in the on-site mill comes from the NEX zone, which is the northern extension of 21B, and from Hanging Wall and Footwall zones. Metal zoning is such that low levels of deleterious metals are present in NEX ore. Hanging wall ore comprises sulphide beds in mudstone intercalated with basalt above the Contact Mudstone. Footwall ore occurs in rhyolite below the Contact Mudstone and consists of gold enrichment along faults and in areas of silica and sericite alteration. The 109-footwall zone had ideal milling characteristics but was mined out in late 2004. The 21C footwall zone has poor milling characteristics and is erratic in gold grade. With respect to exploration, a comprehensive geologic review identified targets that were tested by approximately 16 000 metres of drilling from mine workings. The primary targets were depressions in the top of the rhyolite inferred from isopach maps, and were of small tonnage potential due to proximity of prior drillholes. No results are available.

The **Endako** open-pit molybdenum mine, owned 60% by Thompson Creek Mining Ltd and 40% by Sojitz Moly Resources Inc, celebrated its 40th year of operation in 2005. Reserves are sufficient until 2013. Endako ore averaged 0.060% molybdenum during the year, a lower grade than in 2004. The in-pit crusher and two new 190-tonne trucks purchased in 2005 contribute to Endako's low cost of production, compensating for the mine's low ore grade and enabling it to operate through periods of low molybdenum price. The mill normally processes 30 000 tonnes per day and recovers about 78% of the molybdenum sulphide, all of which is converted to molybdic oxide in the on-site roaster.

Feedstock for the roaster was supplemented by a small amount of concentrate from Highland Valley Copper and offshore mines, on a toll basis. Some eighty-five per cent of the oxide is shipped to Asia; the balance goes to U.S. and Canadian buyers. In 2004 Endako halted co-production of Ultrapure, its trademarked molybdenum sulphide lubricant, in favour of producing more oxide, which is more profitable. The work force ranged from 240 to 250 people.

Figure 2.4. Underground jackleg miner at Eskay Creek.

Endako (MINFILE 93K 006) is a porphyry molybdenum deposit within the early Cretaceous Francois Lake granite batholith. Mineralization is related to an aplitic phase that intrudes an older coarse-grained variety. The ore body is a 3.5- kilometre long stockwork zone that is elongated to the west-northwest and dips about 50° south to a depth of 330 metres. The hanging wall of the ore zone is delineated by the South

Figure 2.3. Location map. Mines and Exploration Projects in Northwest British Columbia, 2005.

Basalt fault. The company completed a major stripping program in the Endako pit, to access ore and stabilize the north and south walls. Instability occurs where moderately dipping fractures intersect cross faults resulting in wedge failures. At times, ore from a low-grade stockpile is used to supplement pit production. At year-end Endako began a 4500-metre exploration drill program.

The **Huckleberry** copper mine is operated by Huckleberry Mines Ltd and owned 50% by Imperial Metals Corp and 32% by Mitsubishi Material Corp The remaining 18% is shared equally among Dowa Mining Ltd, Furakawa Company Ltd and Marubeni Corp The mine is located 121 kilometres by road south of Houston at the foot of Huckleberry Mountain; the mountain is a key constraint in stripping. In 2004 the mill processed 6 867 153 tonnes of ore grading 0.454% copper and 0.014% Mo. Huckleberry began to stockpile low grade ore in 2005. Copper production is forecast at 34 000 tonnes, up from 2004. Copper recovery in 2004 averaged 85.9% but molybdenum recovery was just 20.4%. The metallurgical cause of such poor molybdenum recovery at Huckleberry is unknown (P. Ogryzlo, pers. comm.). Molybdenum recovery is projected to be significantly better in 2005 and production is forecast to increase by 50% to 250 tonnes. Copper concentrate is trucked to the port of Stewart for shipment to Japan and molybdenum concentrate is trucked to Vancouver. The mine employs 230 people.

Huckleberry (MINFILE 93E 037) is a porphyry copper deposit related to the late Cretaceous Bulkley intrusions. Copper mineralization, which occurs in two zones one kilometre apart, is developed within a granodiorite stock but is more extensive in the adjacent hornfelsed and fractured volcanic rocks. The ore is a stockwork of quartz, pyrite and chalcopyrite, crosscut by gypsum-filled fractures. The intrusions and biotite hornfels zone are controlled by a fault that trends 110°. All the ore mined in 2005 came from the East pit. Flat holes drilled in 2004 from the pit floor to alleviate instability of the East Pit high wall (the base of Huckleberry Mountain) were very successful. Water dammed behind the 110° fault was drained, which reduced pressure on the pit wall and there were no wall failures in 2005. Early in the year, the East zone resource was recalculated based on a copper price of US$1.05, which resulted in a 3 million tonne addition to reserves.

Exploration drilling of an area northwest of the Main zone, named the Main Zone Extension, began in 2004 and continued with an additional 6000 metres in 2005 (Figure 2.5). The work delineated a copper-molybdenum zone about 550 metres by 200 metres in plan and to a maximum depth of 200 metres, with sharp upper and lower boundaries, that appears to be a faulted offset of the Main zone. On December 15, Huckleberry Mines decided not to mine the Main Zone Extension. A financial analysis determined that that the copper price must exceed US$1.50 per pound in 2008 and 2009 in order that mining the Main Zone Extension would be more profitable than the current mine plan. The company noted the operational risk engendered by proximity to the Main pit, which contains waste rock and mill tailings. The decision could be revisited until late 2006.

Figure 2.5. Drilling the Main Zone Extension at Huckleberry copper mine.

## INDUSTRIAL MINERAL QUARRIES

At **Fireside** (MINFILE 94M 003), 125 km east of Watson Lake., Fireside Minerals Ltd quarried 15 000 tonnes of rock to yield 10 000 tonnes of barite. Fireside Minerals is a private company based in Calgary. Mining and trucking were contracted to Jedway Enterprises Ltd of Watson Lake. Run-of-mine material was concentrated using jigs at the mine site then crushed and bagged at a plant in Watson Lake. Fireside employs a total of 25 on a seasonal basis. The product is used in the very active western Canadian oil and gas drilling industry where the current demand for barite drilling mud is strong. Fireside plans to produce 20 000 tonnes of barite in 2006.

Fireside barite occurs in two coarse-grained, fault-controlled veins within rocks of the lower Paleozoic Kechika Group. For several years, all production has been from the Bear vein. The Bear vein strikes east northeast, dips steeply north and is up to 10 metres wide. To the north, the vein is bounded by buff-brown phyllite and on the south by black siltstone and quartzite that is fractured and in-filled by quartz and calcite. Ten holes totaling 750 metres were drilled on the Bear and nearby Moose vein. Additional resources are deduced to exist at the north end of the previously mined Moose vein.

Five jade properties were active in the Dease Lake and Cassiar areas; Cassiar, Polar Jade, Blue J, Kutcho and Two Mile. Nephrite jade is found at the contact between tectonically emplaced serpentinite and argillite within the Cache Creek and Slide Mountain oceanic terranes. Jade production data was kindly provided by Ernest Hatzl, president of Cassiar Jade Contracting Ltd. Cassiar Jade Contracting recovered 28 tonnes of high-quality jade by sorting rock in the waste dump at the closed **Cassiar** chrysotile asbestos mine (MINFILE 104P 005),

employing up to 5 people. At **Polar Jade** (MINFILE 104I 083) near Serpentine Lake, Cassiar Jade Contracting partnered with Jedway Enterprises Ltd to cut and transport 14 tonnes of high-quality jade from previously mined blocks. The two companies produced 4 tonnes from **Blue J** (MINFILE 104I 062) east of Provencher Lake (Figure 2.6). All this jade, some 46 tonnes, was trucked to the facilities of The Jade West Group in Surrey BC to be sold, mainly to Chinese and Korean buyers. The market price for high-quality jade is Cdn $3.50 per pound. A drilling program at Polar Jade, of about 300 metres in 15 holes, failed to locate more jade (D. Schussler, pers. comm.). At **Provencher Lake** (MINFILE 104I 073, 092), Glenpark Resources Ltd hauled about 150 tonnes of mid-quality jade in large blocks to Dease Lake for transshipment to Washington state for use in the building industry. King Mountain Jade Mines Inc produced 40-50 tonnes of mid-quality jade from the Two Mile deposit (MINFILE 104I 103) for sale in Dease Lake and Jade City.

Figure 2.6. Near Provencher Lake, diamond-sawing jade blocks to assess quality.

## MINERAL EXPLORATION

### *ATLIN AREA*

Adanac Moly Corp completed 19 drillholes on the **Ruby Creek** molybdenum deposit (104N 052) and continued baseline environmental studies. The company proposes to build a 20 000 tonne per day open pit mine; *Terms of Reference* for the project are under review by the BC Environmental Assessment office. Current drilling recovered material for a metallurgical study, tested rock quality of the proposed pit wall and explored the southern limit of the ore zone. The information is being used in a feasibility study due for completion by 2005 year-end. Estimated capital cost is Cdn $320-420 million. Prior to 2005 fieldwork, the company announced a NI 43-101 compliant geological resource (measured plus indicated) of 205.1 million tonnes grading 0.062% Mo, at a cut-off grade of 0.04% Mo. The deposit is a quartz-molybdenite stockwork that occurs near the domal top of a multi-phase stock, a satellite of the highly differentiated Surprise Lake granite batholith. Molybdenite veins are predominantly gently dipping and are preferentially located in a flat-lying aplite body. The 150 to 200-metre thick, blanket-shaped molybdenum zone lies near surface in the broad valley of upper Ruby Creek, and is rooted in the steeply dipping, north-trending Boulder Creek fault (R. Pinsent, pers. comm.). The molybdenum zone is truncated by erosion to the south and down-dropped north of the 070° striking Adera fault where, due to rising topography it is effectively inaccessible to open-pit mining. The mineralized zone may extend southwest; in 1973, a 335-metre vertical hole collared 170 metres west of the known deposit bottomed with 36.6 metres grading 0.103% molybdenum. Exploration drilling of this area is planned in 2006.

The **Golden Eagle** property of Signet Minerals Inc straddles Tutshi Lake, near the Yukon border 60 km northwest of Atlin. Signet Minerals acquired the mineral interests of Marksmen Resources Limited and performed horizontal loop-EM and IP surveys, trenching, and drilled 7 holes to follow up prospecting and airborne geophysical targets. From north to south, 2 holes were drilled in the Skarn or Bennett Lake zone (MINFILE 104M 085), 3 in the Tannis zone (MINFILE 104M 074), also known as Middle Ridge, and 2 in the Camp zone (MINFILE 104M 057), also referred to as the Carbonate zone. In the Skarn zone gold occurs in quartz-carbonate-tremolite veins in mafic volcanic rocks of the Stuhini Group. At Middle Ridge (Figure 2.7), the target is a series of epithermal quartz-tennantite-veins containing significant gold and silver in a north-striking, steep dipping rhyolite dike (S. Casselman, pers. comm.). The rhyolite dike is 100 metres wide and cuts Boundary Range metamorphic rocks. Trench 9 in the Tannis zone returned an average assay of 2.57 g/t gold over 15.5 m. Fifty meters below the trench, drillhole Tan 2 intersected 10.7 g/t gold and 104 g/t silver across 5.5 m. In the Camp zone, the target is a gold soil anomaly associated with felsic volcaniclastic rocks that are altered to quartz, sericite and pyrite.

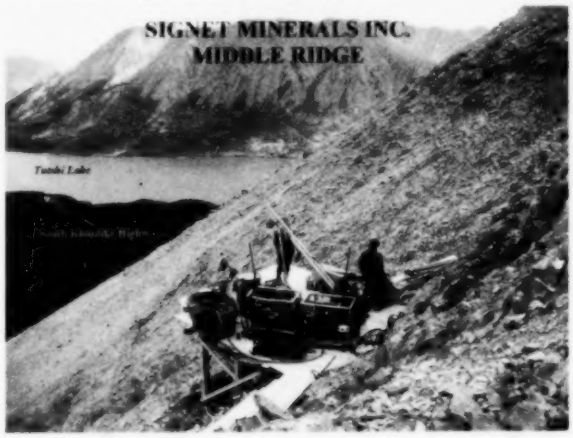


Figure 2.7. Drilling at Middle Ridge (Tannis zone) on the Golden Eagle property; courtesy of Aurora Geosciences Ltd.

employing up to 5 people. At **Polar Jade** (MINFILE 104I 083) near Serpentine Lake, Cassiar Jade Contracting partnered with Jedway Enterprises Ltd to cut and transport 14 tonnes of high-quality jade from previously mined blocks. The two companies produced 4 tonnes from **Blue J** (MINFILE 104I 062) east of Provencher Lake (Figure 2.6). All this jade, some 46 tonnes, was trucked to the facilities of The Jade West Group in Surrey, BC to be sold, mainly to Chinese and Korean buyers. The market price for high-quality jade is Cdn $3,50 per pound. A drilling program at Polar Jade, of about 300 metres in 15 holes, failed to locate more jade (D. Schussler, pers. comm.). At **Provencher Lake** (MINFILE 104I 073, 092), Glenpark Resources Ltd hauled about 150 tonnes of mid-quality jade in large blocks to Dease Lake for transshipment to Washington state for use in the building industry. King Mountain Jade Mines Inc produced 40-50 tonnes of mid-quality jade from the Two Mile deposit (MINFILE 104I 103) for sale in Dease Lake and Jade City.

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### *ATLIN AREA*

Adanac Moly Corp completed 19 drillholes on the **Ruby Creek** molybdenum deposit (104N 052) and continued baseline environmental studies. The company proposes to build a 20 000 tonne per day open pit mine; *Terms of Reference* for the project are under review by the BC Environmental Assessment office. Current drilling recovered material for a metallurgical study, tested rock quality of the proposed pit wall and explored the southern limit of the ore zone. The information is being used in a feasibility study due for completion by 2005 year-end. Estimated capital cost is Cdn $320-420 million. Prior to 2005 fieldwork, the company announced a NI 43-101 compliant geological resource (measured plus indicated) of 205.1 million tonnes grading 0.062% Mo, at a cut-off grade of 0.04% Mo. The deposit is a quartz-molybdenite stockwork that occurs near the domal top of a multi-phase stock, a satellite of the highly differentiated Surprise Lake granite batholith. Molybdenite veins are predominantly gently dipping and are preferentially located in a flat-lying aplite body. The 150 to 200-metre thick, blanket-shaped molybdenum zone lies near surface in the broad valley of upper Ruby Creek, and is rooted in the steeply dipping, north-trending Boulder Creek fault (R. Pinsent, pers. comm.). The molybdenum zone is truncated by erosion to the south and down-dropped north of the 070° striking Adera fault where, due to rising topography it is effectively inaccessible to open-pit mining. The mineralized zone may extend southwest; in 1973, a 335-metre vertical hole collared 170 metres west of the known deposit bottomed with 36.6 metres grading 0.103% molybdenum. Exploration drilling of this area is planned in 2006.

The **Golden Eagle** property of Signet Minerals Inc straddles Tutshi Lake, near the Yukon border 60 km northwest of Atlin. Signet Minerals acquired the mineral interests of Marksmen Resources Limited and performed horizontal loop-EM and IP surveys, trenching, and drilled 7 holes to follow up prospecting and airborne geophysical targets. From north to south, 2 holes were drilled in the Skarn or Bennett Lake zone (MINFILE 104M 085), 3 in the Tannis zone (MINFILE 104M 074), also known as Middle Ridge, and 2 in the Camp zone (MINFILE 104M 057), also referred to as the Carbonate zone. In the Skarn zone gold occurs in quartz-carbonate-tremolite veins in mafic volcanic rocks of the Stuhini Group. At Middle Ridge (Figure 2.7), the target is a series of epithermal quartz-tennantite veins containing significant gold and silver in a north-striking, steep dipping rhyolite dike (S. Casselman, pers. comm.). The rhyolite dike is 100 metres wide and cuts Boundary Range metamorphic rocks. Trench 9 in the Tannis zone returned an average assay of 2.57 g/t gold over 15.5 m. Fifty meters below the trench, drillhole Tan 2 intersected 10.7 g/t gold and 104 g/t silver across 5.5 m. In the Camp zone, the target is a gold soil anomaly associated with felsic volcaniclastic rocks that are altered to quartz, sericite and pyrite.

Figure 2.7. Drilling at Middle Ridge (Tannis zone) on the Golden Eagle property, courtesy of Aurora Geosciences Ltd.

In the heart of the Atlin placer gold camp, Muskox Minerals Corporation performed a 50 km magnetic survey and, late in the year, resumed drilling on the **Yellow Jacket** gold prospect (MINFILE 104N 043). Gold at Yellow Jacket occurs in listwanite-altered fault zones near the contact between serpentinized ultramafic and mafic volcanic rocks of the oceanic Cache Creek terrane. Drill programs in the 1980s by Canova Resources Ltd and Homestake Mineral Development Corp yielded intercepts of 10-35 g/t gold over widths up to 4 metres but continuity could not be demonstrated. Drilling by Muskox is focused in the same 300 metre interval along Pine Creek. Six holes were drilled in the Yellow Jacket zone and 1.5 km to the southwest, three holes were drilled in the Rock of Ages zone, for a total of 895 m.

### *TULSEQUAH-TAKU AREA*

Redfern Resources Ltd updated the resource estimate for the **Tulsequah Chief** deposit (MINFILE 104K 002) in early 2005, following the 30 000 metre drill program done in the previous year. Measured and Indicated resources total 5.38 million tonnes at a grade of 1.41% copper, 1.32% lead, 6.73% zinc, 2.73 g/t gold and 100.8 g/t silver. The figures represent an approximate 10% decrease in tonnage and total metal content from the previous estimate. Of at least equal significance, the Inferred resource was nearly halved to 1.54 million tonnes at 1.13% copper, 1.07% lead, 5.44% zinc, 2.23 g/t gold and 85.1 g/t silver. The drilling program determined the principal H ore zone is restricted in strike length at depth, and it is also disrupted and/or displaced by the 5300 fault. Ore-related alteration remains strong at depth and the faulted continuation of the deposit may well be found, but will require deep drillholes with risk of being lost in the fault zone. Redfern began an update of the feasibility study done in 1995 but the work was halted in mid-year when it became apparent that increased capital and operating costs, combined with the downgraded resource estimate, made the project financially unattractive.

Redfern built a passive system to treat acid water draining from the 5200 level of the mine. The system consists of four cells totaling 90 m in length. The cells contain 300 tonnes of limestone that was quarried nearby, 150 tonnes of screened gravel and 120 cubic metres of organic matter. Local vegetation was fed through a chipper to produce the necessary material. The purpose of the organic material is to retard the rate of flow, allowing the limestone to neutralize the acidic water. The treatment system is expected to mitigate any detrimental effects the drainage may have on the Tulsequah River.

At the **New Polaris** gold property (MINFILE 104K 003), across the Tulsequah River from the Tulsequah Chief project, Canarc Resource Corp completed eight in-fill drillholes in the C-vein system. The ninth hole was lost in 70-metre deep overburden. Gold is associated with disseminated arsenopyrite in conjugate, shear-controlled quartz-ankerite vein stockworks and listwanite alteration developed within Devonian mafic volcanic rocks. The shear zone is a splay of the 220 kilometre-long Llewellyn fault. A previous resource estimate of 3.26 million tonnes grading 12.3 g/t gold is not compliant with Canadian policy NI 43-101. The objective of the current program is to block out proven and probable resources in the C-vein by reducing the spacing between drill intercepts from 60 to 30 metres, beginning down dip of two old stopes in the former Polaris-Taku mine. In the 2005 holes, the weighted average of the principal C-vein intercepts is 14.2 g/t gold over 8.0 m and the hanging wall C-vein intercepts averaged 15.8 g/t gold over 3.5 m. True width is estimated to be 85 to 90% of the core length.

Cangold Limited and Rimfire Minerals Corporation continued exploration of the **Thorn** gold-silver prospect (MINFILE 104K 031) by a program of geological mapping, geophysics and drilling. The target at Thorn, located 125 km southeast of Atlin, is a high-grade epithermal gold deposit associated with the tetrahedrite-enargite veins developed on the property. Five holes were completed, totaling 656 m. Hole THN05-37 intersected 4.44 g/t gold, 407.9 g/t silver and 2.95% copper over 4.2 metres in Talisker zone, discovered in 2004. The host rock in the Talisker zone is strongly sericitized, quartz and biotite porphyritic Thorn stock.

The **Kizmet** project is a joint undertaking of Barrick Gold Corporation and Rimfire Minerals Corporation to explore a 70 km long by 20 km wide belt of rocks adjoining the Thorn property. MTO, the new system of on-line mineral tenure acquisition, was important because it enabled a large land package to be obtained quickly and cheaply. The area from Tatsamenie Lake northwest to the Taku River is underlain by Upper Cretaceous subaerial volcanic rocks and related intrusions that are prospective for epithermal, high sulphidation gold deposits. There are many mineral occurrences in the area, such as MINFILE 104K 074 and 104K 090. Work comprised reconnaissance geological mapping and prospecting. Regional geochemical silt (RGS) data was supplemented by collection of additional 10 kg silt samples for bulk leach extractable gold (BLEG) analyses.

### *CASSIAR-RANCHERIA AREA*

Cusac Gold Mines Ltd shifted exploration from the high-grade gold veins on Table Mountain to a bulk tonnage gold target area 4 km to the north, named **Taurus II** (Figure 2.8). Targets include the following vein systems, Backyard - Newcoast (MINFILE 104P 016), Somerville and Porcupine (MINFILE 104P 077), which flank Troutline Creek north of Highway 37.

A total of 18 holes were drilled totaling 3423 metres. In the Backyard zone, hole 05BY-01 cut 2.03 g/t gold over 32.0 m. In the Somerville zone, hole 05SV-03 intersected 1.27 g/t gold over 19.0 m. Hole 05SV-04 returned a nearly identical intercept of 1.26 g/t gold over 25.6 m. Results of the final five holes are not released yet.

Gold occurs in quartz-sulphide veins in carbonate and listwanite-altered mafic volcanic rocks, within a Paleozoic succession of structurally imbricated oceanic rocks known as the Sylvestor allochthon, a part of the Slide Mountain terrane.

Figure 2.8. Overlooking the Table Mountain mill site and Taurus II project area from Table Mountain.

Strategic Metals Ltd acquired ten mineral properties distributed widely between Rancheria and Galore Creek. Work focused on the **Ranch** property (MINFILE 104O 037), located 25 km south of the Yukon border at Rancheria. Very high-grade silver occurs in discontinuous quartz veins with minor base metal sulphides and bismuthinite, within the Cassiar granite batholith. Work comprised geological mapping, hand trenching and prospecting by six people.

Velocity Resources Inc acquired the Storie molybdenum (MINFILE 104P 069) and Haskin Mountain molybdenum (MINFILE 104P 020, 38) deposits but drill programs were deferred.

### *TURNAGAIN-UPPER STIKINE AREA*

Western Keltic Mines Inc submitted the **Kutcho Creek** project for Environmental Assessment to develop a 3000 to 4000 tonne per day mine. The Kutcho Creek volcanogenic massive sulphide deposit (MINFILE 104I 060) is located 100 km east of Dease Lake. Three elongate sulphide lenses are arranged en echelon over a strike length of 3.5 km within folded felsic volcanic rocks of early Triassic age. Following the 2004 program, the company announced the Kutcho deposit contains a Measured and Indicated resource of 11 554 000 tonnes grading 2.10% copper, 2.80% zinc, 36.2 g/t silver and 0.44 g/t gold (at a 1% copper cut-off). Measured and Indicated resources in the deeper but higher grade Esso West lens are 2 120 000 tonnes grading 3.26% copper, 5.86% zinc, 75.7 g/t silver and 0.71 g/t gold (at a 1.5% copper cut-off). Drilling in 2005 comprised 26 holes for a total of 7372 metres. The upper edge of the Kutcho deposit was extended closer to surface, which will reduce the strip ratio for proposed open pit mining. A higher-grade core was identified in the Sumac massive pyrite body, which was previously discounted as being non-economic, that would offset cost of an underground decline to access the Esso West deposit. Drilling for a westerly extension of Esso West failed to extend the deposit. Planning to mitigate acid generation from tailings and waste rock will be important in developing the Kutcho Creek deposits (Figure 2.9).

Hard Creek Nickel Corporation continued exploration for a bulk-tonnage nickel deposit on the **Turnagain** property, 110 kilometres east of Dease Lake. The 3 by 8 kilometre Turnagain serpentinized ultramafic body contains zones of disseminated, net-textured pyrrhotite with minor pentlandite and rare chalcopyrite. Based on relict igneous textures, the Turnagain ultramafite is comprised of dunite, wehrlite, pyroxenite and hornblendite. Dunite and wehrlite contain the highest levels of nickel (T. Hitchins, pers. comm.). Prior to the field program, the company announced the Horsetrail zone contains an Indicated resource of 15.7 million tonnes grading 0.34% nickel, 0.07% copper and 0.019% cobalt, and an Inferred resource of 31.6 million tonnes at slightly lower grades. Selective analytic methods indicate nickel is present mainly as sulphide. It has been suggested that during emplacement the ultramafic magma was highly reduced by the graphitic argillite country rock causing nickel to be strongly partitioned to the immiscible sulphide phase.

The 2005 program comprised 37 drillholes totaling 7143 metres, which included in-fill drilling in the Horsetrail zone (MINFILE 104I 119) and holes to investigate airborne EM targets. DDH05-85 in the Highland EM anomaly, 3 km northwest of Horsetrail, intersected 0.38% nickel over a 17.5 m interval of disseminated pentlandite and pyrrhotite. West of the Horsetrail zone, near the southern contact of Turnagain ultramafite, DDH05-88 intersected 0.86 g/t platinum plus palladium over 18.9 m at the end of the hole. The Horsetrail zone was extended 350 m to the west. Upon calculation of a new resource estimate, the company plans to begin a preliminary economic assessment that will include geology, metallurgy and mine engineering.

Figure 2.9. Kutcho Creek, cells to test for generation of acidic run-off water using rock from the adit, built in 1980s.

At the **Eaglehead** copper prospect (MINFILE 104I 008), Carmax Explorations Ltd completed a 25 km IP survey over the eastern extension of a 10 km long zone of porphyry mineralization. The most easterly of 59 holes drilled during previous exploration between 1970 and 1981 intersected 0.94% copper over 63 metres. Drilling is planned in 2006 to investigate this high-grade intercept and, in the Far East zone, to test IP and soil anomalies. Carmax proposes to access the property by extending a trail 6 km from placer gold workings on Bobner Creek, a minor tributary of the Turnagain River.

At **Gnat Pass** (MINFILE 104I 001) Bear Claw Capital Corporation cut a grid and performed a 32 km IP survey. Gnat Pass is an alkalic porphyry copper prospect located 26 km south of Dease Lake, adjacent to Highway 37.

Rimfire Minerals Corporation delineated a strong IP chargeability anomaly on the **William's Gold** property, 140 km east of Dease Lake. The 1500-metre long IP zone is coincident with a copper-molybdenum-gold soil anomaly and associated porphyry mineralization (MINFILE 94E 028 and 044). The anomalies are 4 km north of the area previously explored for a bulk-tonnage gold deposit (see *EMBC-2002, 2003, 2004*).

### *TELEGRAPH CREEK AREA*

At **Copper Creek**, Firesteel Resources Inc completed 12 drillholes totaling 1524 metres and trenched 500 metres in the DK porphyry copper prospect (MINFILE 104J 035). The program continued drilling begun in 2004. Monzonite, probably an apophysis of the Kaketsa pluton, intrudes mafic volcanic rocks and bedded tuffs of the Stuhini Group. Quartz stockwork, with chalcopyrite more abundant than pyrite, is developed across the intensely fractured intrusive contact over an area that now measures 500 metres by 500 metres in plan and 250 metres deep. Secondary copper minerals (malachite, azurite and sooty chalcocite) predominate in the upper 30-60 metres from the surface. Supergene copper enrichment is evident from assay data of some holes. Grades range from about 0.2 to 0.5% copper and 0.06 to 0.3 g/t gold, with up to 1% copper in enriched zones. The zone is open to expansion and two other zones of porphyry copper and skarn mineralization remain to be explored. The property is 50 km northwest of Telegraph Creek and 8 km from the Golden Bear mine road.

Copper Fox Metals Inc collected material for a metallurgical study from the **Schaft Creek** porphyry copper deposit (MINFILE 104G 015) by drilling 3161 m of P-size core in 15 holes. The property, located 50 km south of Telegraph Creek, is under option from Teck Cominco Ltd. Based on 60 000 metres of prior drilling, Copper Fox estimates Schaft Creek to contain a combined Measured and Indicated resource of 332 million tonnes grading 0.39% copper, 0.026% molybdenum and 0.267 g/t gold, at a 0.4% copper equivalent cut-off. Most of the current drilling twinned historic holes, to validate assay data and to gain a better assessment of gold content (Figure 2.10). Copper Fox also began environmental and road access studies, and plans to enter the Environmental Assessment process in early 2006 (G. Salazar, pers. comm.). The deposit is comprised of three zones; all current work is in the principal Liard zone and the internal West Breccia zone (tourmaline bearing), the smaller Paramount zone is 400 m north. The host rocks are feldspar and augite-phyric volcanic rocks of the Stuhini Group, invaded by dikes derived from both the westerly adjacent Hickman granodiorite batholith and, in the Paramount zone, from the northerly adjacent Yehiniko granite pluton. Mineralization has been genetically linked to the Upper Triassic Hickman intrusion. The ore minerals are chalcopyrite, pyrite, bornite and molybdenite, listed in order of decreasing abundance. The geometry of the Liard zone is atypical of porphyry deposits; it is bowl-shaped with sub-horizontal copper grade contours. The comparatively low abundance of pyrite will reduce the risk of acidic runoff, in the event the deposit is mined.

Figure 2.10. Schaft Creek, cutting P-size core to provide samples for assay and metallurgical study.

Forty-five kilometres west of Telegraph Creek, Newcastle Minerals Ltd performed an airborne magnetic and radiometric survey over the **Target** claims (MINFILE 104G 149). Previous explorers traced a mineralized boulder train with high gold grade to the Limpoke glacier. The property has potential to host a high-grade gold vein or copper-gold porphyry deposit related to the nearby Limpoke pluton.

### *KINASKAN AREA*

The **Red Chris** copper-gold project received an Environmental Certificate on August 11, 2005 concluding its progress through the Environmental Assessment process. The proponent, bcMetals Corporation, has not decided to construct the mine pending a commitment to extend the Provincial power grid 230 km up Highway 37 to Iskut. Mineable reserves at Red Chris (MINFILE 104H 005), excluding low-grade stockpile material, are estimated at 185.4 million tonnes at 0.414% copper and

0.325 g/t gold and, if mine development proceeds, would supply a 30 000 tonne per day mill. Stockpile material is estimated to be 92.4 million tonnes grading 0.216% copper and 0.145 g/t gold and would be milled after the higher grade ore. The initial waste to ore ratio is 2.3, declining to 1.1 after processing the stockpile material. Capital costs are estimated to be $228.5 million. A new 22-kilometre road would connect the mine to Highway 37. Investigation into the on-site production of metallic copper and gold by a new hydrometallurgical process achieved gold recovery that was below expectation and the work was halted. Instead, copper concentrate would be trucked to Stewart for transshipment to smelters.

The **GJ** (or Kinaskan) property of Canadian Gold Hunter Corp includes the GJ and Donnelly zones (MINFILE 104G 034 and 086) of porphyry copper-gold mineralization related to the poorly exposed Groat monzonite stock. The property is 25 km southwest of Iskut. Drilling of the Donnelly zone in 2004 derived a resource estimate of 71.2 million tonnes grading 0.40% copper and 0.40 g/t gold at a 0.2% copper cut off. Work in 2005 comprised 56 holes that totaled 16 394 metres. Two holes tested the North zone with disappointing results, ten were in the GJ zone and the remainder comprised in-fill and step-out holes at Donnelly. Donnelly zone results continued to be encouraging. The zone is now known to be 1500 metres long, still open at both ends, and is up to 300 metres wide. To the west, the Donnelly zone narrows but contains higher grade; the final hole, and most westerly drilled to date, intersected 0.83% copper and 1.32 g/t gold across 46.95 metres. This tenor and width may be more amenable to underground mining rather than open pit. A revised resource calculation is in progress. Monzonite is medium-grained, non-porphyritic and moderate to strongly magnetic. Dikes and sills of monzonite intrude mafic volcanic rocks and volcanic wackes of the Stuhini Formation. Mineralization occurs as disseminated chalcopyrite and as a quartz-chalcopyrite stockwork that is most intense to the west (D. Mehner, pers. comm.). Pyrite is subordinate to chalcopyrite; bornite and molybdenite are rare. K-feldspar occurs in the groundmass, colouring the rock pink, and as vein envelopes. In mineralized areas, K-feldspar is altered to sericite and magnetite is replaced by hematite. Ankerite is prominent as a pervasive, late alteration mineral.

On the **Rok** claims (104H 001) north of Ealue Lake, Firesteel Resources completed 125 km of airborne electromagnetic and magnetic surveying to aid exploration for a porphyry copper deposit.

### *ISKUT DISTRICT*

At **Galore Creek**, NovaGold Inc expanded the camp to accommodate 200 people and carried out a $50 million program that required 10 drills and 6 helicopters. Work comprised 63 235 metres of drilling, site and access engineering studies, and environmental assessment. Drilling focused on infill and resource extension but also included geotechnical study, recovery of material for metallurgical assessment, and exploration for new mineral zones. Prior to the 2005 program Measured plus Indicated resources were estimated at 516.7 million tonnes grading 0.60% copper, 0.36 g/t gold and 4.54 g/t silver with an additional 578.3 million tonnes inferred at a grade of 0.41% copper, 0.42 g/t gold and 4.35 g/t silver. In terms of project design, the most significant developments are: (1) selection of a 'modified' northern access route; a 120 km, single lane road that follows the valleys of More and Sphaler creeks to the Porcupine River and enters Galore Creek valley by a 4 km tunnel from Scottsimpson Creek (Figure 2.11); (2) a planned milling rate of 65 000 tonnes per day with tailings disposition in Galore Creek valley and (3) transport of concentrate as a slurry through a 6-inch (15 cm) pipeline buried in the road bed to a dewatering facility at Bob Quinn. The company aims to deliver a Project Report to the Environmental Assessment office in February 2006, and to complete a full feasibility report by September 2006.

Figure 2.11. Entrance of the proposed 4 km tunnel at the head of Scottsimpson Creek, leading to the rich Galore Creek copper-gold deposits on the north side of the mountain.

Geologic origin of copper-gold deposits at Galore Creek remains enigmatic. In a geologic presentation at Cordilleran Roundup in 2005, NovaGold's Chief Geologist Scott Petsel observed that mineralization is more akin to a skarn or replacement deposit than to a porphyry deposit; a stockwork, quartz-bearing or otherwise, is not developed. Garnet, potassium feldspar, biotite, magnetite and epidote are associated with chalcopyrite, bornite and pyrite. The zones drilled in 2005 are: Central (MINFILE 104G 090), Southwest (MINFILE 104G 095), Middle Creek (MINFILE 104G 156), West Fork (MINFILE 104G 091), North Junction (MINFILE 104G 092), Copper Canyon (MINFILE 104G 017) and Butte (MINFILE 104G 094). The evolving geological model used by NovaGold identifies a favourable horizon in the alkaline volcanic pile (Figure 2.12), recognized by abundant pseudoleucite (a relict feldspathoid mineral) that was receptive to a copper-bearing potassic solution (S. Petsel, pers. comm.). The hydrothermal fluid was derived from an underlying alkaline intrusion. Application of the

model discovered new mineralization in the Butte zone, in contrast to poor results obtained by drilling IP anomalies.

Figure 2.12. North Junction zone at Galore Creek, copper mineralization in sub-horizontal alkalic volcanic rocks.

At the **Kerr-Sulphurets** property, 40 km southwest of Bell II, Falconbridge Limited completed 4092 metres of drilling in 16 holes, distributed over six zones. The objective was to assess the potential for additional gold-rich porphyry copper resources to enhance viability of the Kerr and Sulphurets deposits outlined by previous explorers of the property. The Kerr deposit is estimated to contain 141 million tonnes grading 0.75% copper and 0.36 g/t gold and Sulphurets is estimated to contain 54.8 million tonnes grading 1.02 g/t gold. Placer Dome Inc made both resource calculations in 1993, prior to NI 43-101. At Iron Cap (MINFILE 104B 173), five holes spaced 200-300 metres apart and 250 metres deep, penetrated quartz-sericite-pyrite altered monzonite and andesite. Very fine-grained chalcopyrite occurs throughout four of the holes; over their entire assay lengths of 243 to 249 metres, the four holes returned an average grade of 0.20% to 0.22% copper with 0.27 to 0.52 g/t gold.

One hole was drilled in the West Mitchell zone (MINFILE 104B 176), near the toe of the Mitchell glacier. Over its full assay length of 279.1 metres, it returned 0.17% copper and 0.65 g/t gold. Two holes were drilled in the Icefield zone (MINFILE 104B 203) and both returned multiple intercepts, up to 23.1 metres of 0.45% copper in one hole and 126 metres of 0.51 g/t gold in another. Falconbridge tested three other zones: Main Copper (MINFILE 104B 182; 3 holes), North Mitchell (MINFILE 104B 180; 3 holes) and MacQuillan (104B 285; 1 hole). At Main Copper, long intervals of low-grade copper-gold mineralization were encountered in each hole, including 70 metres at 0.33% copper and 0.32 g/t gold. Both Main Copper and Icefield are proximal to the Sulphurets Gold deposit (Figure 2.13); the former is immediately above the Sulphurets zone and Falconbridge interprets the latter to be its northeast extension (M. Savell, pers. comm.). Any resources developed in the Main Copper or Icefield zones would augment the Sulphurets resource and reduce the amount of waste rock. The property holds many challenges; the four mineralized areas – (1) Kerr, (2) Sulphurets-Main Copper-Icefields, (3) North Mitchell-Snowfields and (4) Iron Cap lie on three separate ice-capped mountain ridges separated by deep valleys occupied by glaciers, and span a distance of 10 km.

Figure 2.13. Falconbridge geologists review core from the Icefield zone, located on the distant skyline flanking the Sulphurets Gold zone and Main Copper zone, on the cliff face.

At the **RDN** property, Equity Engineering Ltd conducted geological work and supervised a six-hole (1470 m) drill program on behalf of Northgate Minerals Corporation. The property (MINFILE 104G 144) is located 40 km north of the Eskay Creek mine or 25 km west of Bob Quinn. Rock strata and mineral deposit setting on the RDN property are comparable to the Eskay Creek deposit, serving to attract gold explorers for many years (see *EMBC-2001*, page 65-71). Work in 2005 was divided between the RTB silver showing discovered in 2004, and the Arctic grid where soils are anomalous in Eskay indicator elements and flow-banded rhyolite was recently dated at 176.5 Ma, correlative with the Eskay Creek deposit. Mineralization in the RTB zone is related to brecciation and silicification of well-bedded sedimentary strata (Figure 2.14). Surface sampling returned an assay of 129.2 g/t silver and 0.16% zinc across 3.3 metres. Results of the drill program were not released but Northgate stated its intent to fund exploration of the Arctic grid area in 2006.

Roca Mines Inc carried out a 700 km airborne EM and magnetic survey and drilled 4 holes totaling 2200 metres on the **Foremore** property (MINFILE 104G 148). Foremore is located 40 km west of Bob Quinn on Highway 37. Drilling continued exploration of Devono-Mississippian felsic volcanic rocks in upper More Creek valley for a massive sulphide deposit. Multiple massive sulphide horizons, each about 1 metre wide and of modest grade, were intersected in 2004 holes. Similar results were obtained in the current drilling (J. Mirko, pers. comm.).

Heritage Explorations Ltd carried out an 11 hole (2293 m) drilling campaign on its **Eskay** property to explore geological targets and EM anomalies detected by its airborne survey in 2004. Heritage holds extensive claims surrounding the Eskay Creek mine. A hole in the

TV zone (MINFILE 104B 385) penetrated mudstone underlain by brecciated and sericitized dacite, with stringers of pyrrhotite. Drilling also tested the **Bonsai** showing (MINFILE 104B 383), where massive pyrite occurs in sub-volcanic rhyolite. No results were available.

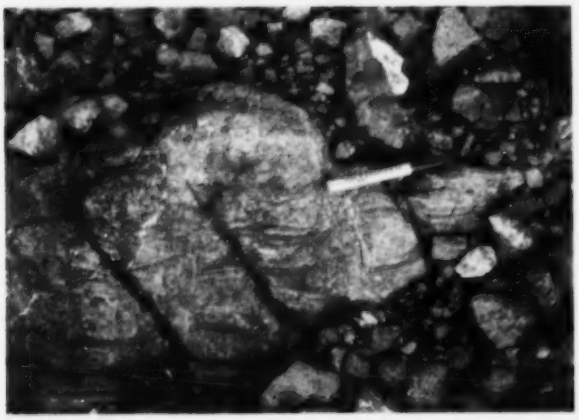

Figure 2.14. RTB zone showing preservation of sedimentary bedding in pervasive silicification.

On the **Corey** property, Kenrich-Eskay Mining Corporation continued systematic geological mapping, geochemical prospecting and drilling focused on rhyolite and mudstone horizons on strike 10 km south of the Eskay Creek gold and silver-rich VMS deposit. Helicopter-supported geologic work located new bodies of rhyolite (Figure 2.15). Forty-four holes (6900 metres) were drilled that tested the Smitty and Cumberland (MINFILE 104B 011) massive sulphide showings, the C-10 zone (MINFILE 104B 355), an area of quartz-sericite-pyrite alteration, and other Eskay-VMS targets. The Smitty occurrence was discovered in 2004 on the heavily timbered east slope of the South Unuk river valley; C-10 is located at sub-alpine elevation on Mt. Madge.

Figure 2.15. Corey property, helicopter landing pad near the Smitty showing. Sean McKinley discoverer of the showing.

At **Newmont Lake**, 30 km southeast of Galore Creek, Romios Gold Resources compiled exploration data, completed airborne magnetic and 3-dimensional IP surveys, and drilled one hole. The company acquired the adjacent Seagold claims from Roca Mines Inc. The consolidated Newmont Lake property is underlain by northeast faults that preserve well-mineralized early Mesozoic volcanic and intrusive rocks in a 3-km wide graben within Paleozoic Stikine Assemblage. Considerable prior exploration was done under fragmented ownership. The Northwest (or McClymont zone, MINFILE 104B 281) is described as a 'retrograde copper-gold skarn' that was explored by more than 16 000 metres of drilling between 1987 and 1990. In the same period, different operators explored the Ken (MINFILE 104B 027) and Camp (MINFILE 104B 126) copper-gold zones, respectively located 4 km north and 3.5 km southeast of the Northwest zone. Drilling amounted to 456 metres and 1339 metres, respectively in the two zones. The mineral targets in the Newmont Lake graben are alkalic porphyry copper-gold and related skarn deposits. Romios completed one drillhole to a depth of 250 metres in the Camp zone.

Goldrea Resources Corporation performed a 20 km IP survey on the **BX** claims located 20 km west of Eskay Creek. Gold occurs in skarn and vein zones associated with the early Jurassic Lehto batholith of granodiorite to syenite composition.

### *STEWART NORTH TO GRANDUC*

Bell Resources Corporation began a reappraisal of the **Granduc** depośit (MINFILE 104B 021), 40 km north of Stewart, dormant since 1982 when the underground copper mine closed. Granduc is a volcanogenic massive sulphide deposit with a total mineral inventory of 29.03 million tonnes grading 1.83% copper, which includes 15.4 million tonnes of production (Bell Resources website). The copper deposit occurs near the top of the Hazelton Group, at the stratigraphic contact between mafic pillow lava and tuff with overlying sedimentary rocks that include chert, argillite and tuff. Principal ore minerals are pyrite, chalcopyrite, pyrrhotite, magnetite and lesser sphalerite. The mineral sequence has been interpreted as a sulphide facies banded iron formation. Bell Resources compiled historic data, commissioned a 1200 km airborne EM and magnetic survey and drilled 5 holes (2090 m). Also, Bell Resources acquired the Leduc claims from Teuton Resources Corp Drilling targeted the southerly extension of the Granduc deposit under the South Leduc glacier, an area made more accessible by continued ablation of the icefield. The ore zone was found to extend 200 m south and 200 m down dip from previously mined areas. Significant intersections include 2.21% copper over a true thickness of 7.6 m in 2005-1, 2.57% copper over a true thickness of 7.8 m in 2005-4 and 2.13% copper over a true thickness of 8.1 m in 2005-5.

Tenajon Resources Corporation undertook surface and underground diamond drilling at the closed **Summit Lake** (Scottie) gold mine (MINFILE 104B 034). Gold occurs in a series of en echelon quartz-pyrrhotite-pyrite-calcite veins near the margin of the Summit Lake granodiorite stock. Nineteen holes collared underground

tested three of these veins; the M zone east and west of previous mining and the N and L zones. Intercepts ranged between 3.5 g/t gold and 24.6 g/t gold over widths of 0.5 to 8 metres. Surface drilling (16 holes, 639 m) tested the Bend (MINFILE 104B 132), Blueberry (MINFILE 104B 133) and Road veins, and returned intercepts of 10 to 20 g/t gold over true widths of 1 to 2 metres. The Summit Lake mine closed in 1984 due to high maintenance cost associated with the access road following closure of the nearby Granduc copper mine. It produced 183 000 tonnes of ore at an average grade of 16.2 g/t gold and, at shutdown, geological resources were estimated at 120 000 tonnes at an average grade of 19.1 g/t gold (prior to NI 43-101).

At the **Tide** property (MINFILE 104B 129), 36 km north of Stewart, Serengeti Resources Inc completed an airborne EM and magnetic survey (315 km), geological and geochemical work, and drilled eight holes (967 m). Four holes in the bulk-tonnage 36 zone extended gold mineralization along strike in both directions and to depth. Hole TIDE05-07 intersected 0.74 g/t gold over 55.7 m and hole TIDE05-08 intersected 0.72 g/t gold over 121.7 m. Soil sampling increased the gold-arsenic-antimony anomaly coincident with the 36 zone to an area of 0.5 by 2.1 km. The 36 zone is an east-west fracture system mineralized with pyrite, arsenopyrite and lesser pyrrhotite. The volcanic host rocks belong to the Hazelton Group and are intruded by a 200 to 1000 metre wide hornblende-feldspar porphyry sill complex, an offshoot of the Summit Lake stock. Four holes tested the 52 zone, which yielded spectacular gold assays from surface sampling in 2004. Drilling, combined with additional surface work, show gold grade is highly variable. The best drill intercept was 6.24 g/t gold and 8.8 g/t silver over 0.59 m.

Pinnacle Mines Ltd conducted a program of trenching and 47 drillholes on the **Silver Coin** property (MINFILE 104B 150), 24 km northwest of Stewart, under an agreement with Mountain Boy Minerals Ltd. The property includes the Kansas claim that was acquired from Tenajon Resources Corp. Work focused on the Perseverance zone, which is reported to be 600 m long, 20 to 30 m wide and has been followed 300 m down dip. Intersections in the Perseverance zone range from 1.97 g/t gold over 36.6 m in DDH-2005-48 up to 47.4 g/t gold over 9.15 m in DDH-2005-65. True widths are not reported. Previous operators identified five irregular vein-stockwork and breccia zones on the property (also known as Silver Butte) that contain gold, silver and base metals. Mining in the 35 zone by Westmin Resources Ltd in 1991 produced 105 000 tonnes of ore grading 7.86 g/t gold and 23.4 g/t silver. In 1995 (prior to NI 43-101) Westmin calculated resources in the Kansas/West Kansas (KWK) zone to be 1 774 000 tonnes grading 2.20 g/t gold based on drilling, underground development and three bulk samples.

### *STEWART SOUTH TO ALICE ARM*

Tenajon Resources Corporation reactivated the **Ajax** molybdenum prospect (MINFILE 103P 223). Ajax is 14 km north of Alice Arm town site in the Kitsault valley. It was explored in 1965-1967 by 8100 metres of A-size core that was used to derive a resource estimate of 175 million tonnes grading 0.074% Mo. In 2005, three holes were drilled using H and N-size core. Assays from twinned holes are 14% higher in grade, and confirm the zone is open at depth. The third hole bottomed with 38 metres that graded 0.106% molybdenum. A new resource calculation is in progress that will comply with NI 43-101.

Bravo Venture Group Inc returned to the **Homestake Ridge** gold prospect (MINFILE 103P 216) to complete 1643 metres of drilling in 11 holes, intersecting significant gold-silver values. Mineralization occurs as an extensive zone of breccia and quartz veins near the contact of the Goldslide hornblende-feldspar porphyritic stock. The style of mineralization is comparable to deeper levels of the Silbak Premier deposit. The 2005 drilling at Homestake Ridge tested a northwest structure over a 300-metre length. Hole HR05-13 intersected 4.1 metres grading 7.9 g/t gold and 554.6 g/t silver and hole HR05-17 cut 7.4 metres grading 10.6 g/t gold and 21.8 g/t silver, demonstrating the range from modest to high silver grade. North of the intervening Cambria Icefield, the Goldslide intrusion is host to the Red Mountain gold deposit, adding significance to this geological setting. Late in 2005, Copper Ridge Explorations Inc acquired the **Willoughby** (MINFILE 103P 006) gold prospect located east of the Cambria Icefield, where mineralization is also related to hornblende feldspar porphyry, possibly a continuation of the Goldslide body.

Sabina Silver Corporation acquired the **Del Norte** property 34 km east of Stewart from Teuton Resources Corporation and drilled the K-LG gold-silver vein (MINFILE 104A 161). The quartz-calcite breccia vein contains sulphosalt minerals, pyrite, sphalerite and galena. Ten holes were completed along the southern 500 metres of the 1.2 kilometre-long vein. Drilling between 2002 and 2004 indicates the vein is usually less than 1 metre thick, but a 15.5 metre intercept was reported in drillhole DN05-02 that assayed 6.58 g/t gold and 350 g/t silver. True thickness of the intersection is not known. Late in 2005, Canasia Industries Corp struck an agreement with Teuton Resources Corporation on the **Clone** gold prospect (MINFILE 103P 251).

A diamond-drilling program was carried out on the **Poly** claims, 42 kilometres northeast of Stewart, by Lateegra Resources Corp and Cypress Development Corp Seven holes totaling 908 metres tested a series of gold and silver-bearing veins, associated base metal sulphides and related IP anomalies. No significant assays were reported.

### *TERRACE-PRINCE RUPERT AREA*

Trade Wind Ventures Inc continued to explore the **Dardanelle** prospect (MINFILE 103I 107), a small past producer of gold ore located on the north side of the Copper River. On the access road from Highway 16 near Terrace, a bridge required replacement following winter storms. Excavator trenching along 650 metres of strike length exposed quartz veins, developed discontinuously along both margins of an aplite dike. Prospecting further upslope and along a strike of 070° found that aplite and vein float extends for a total distance of 2000 metres (A. Burton, pers. comm.). The aplite is 2 to 6 metres wide and dips steeply northwest; quartz veins are up to 2 metres wide but averages about 1 metre in an adit. The adit, driven in the 1930s along the footwall quartz vein at 190-metre elevation, displays a well-banded vein; the bands consist of thin seams of sericite-chlorite and sulphide minerals. Five holes tested the vein system 200 to 500 metres east of the portal, and to an elevation of 360 metres (Figure 2.16). An historic assay of 9.3 g/t gold is reported but no assays are available from current work.

Figure 2.16. Geologist Alex Burton inspects new drill core on the Dardanelle property.

Trade Wind Ventures Inc also explored the **Treasure Mountain** property (MINFILE 103I 090), 35 km east of Terrace. Hazelton Group volcanic rocks contain veins of chalcocite and bornite. Over a 5 km strike length, all but one of the known copper showings occurs near the interface between green volcanic beds and overlying red volcanic beds (A. Burton, pers. comm.). Work comprised geological mapping, hand trenching and two vertical diamond drillholes, but no results are available.

Eagle Plains Resources Ltd continued exploration for an intrusive-related gold deposit on the **Kalum** property 35 km northwest of Terrace. A series of gold-silver vein showings and soil anomalies are related to the contact of Cretaceous plutonic rocks with sedimentary rocks of the Bowser Lake Group. The company drilled four holes totaling 540 metres in the Hat zone (MINFILE 103I 173). Results were not available.

Eagle Plains Resources Ltd also drilled on the **LCR** claims located immediately north of the Kalum property, to test copper and molybdenum soil anomalies for porphyry mineralization. A partly unroofed body of quartz monzonite underlies the claims and a satellite stock is interpreted from magnetic data to underlie the Shea zone, 1.5 km to the east. The Shea occurrence consists of pyrrhotite, pyrite and chalcopyrite developed in fractured hornfels greywacke. At the Macex showing (MINFILE 103I 021), a quartz vein stockwork, sparsely mineralized with chalcopyrite and molybdenite, is developed in the intrusion and in adjacent siltstone and greywacke. Twenty holes were completed in the various targets, for a total of 2428 metres. No assays have been reported.

Cross Lake Minerals Ltd began a drill program in December at the past-producing gold mine on **Porcher Island** (MINFILE 103J 017), located 35 km southwest of Prince Rupert. Four to five holes are planned in the AT zone.

The **Carlson** claim group, 25 km north of Terrace, covers an occurrence of molybdenite and chalcopyrite in a quartz vein at the margin of a granite dike. It is located near MINFILE 103I 045 but is thought to be a separate mineral occurrence. Gary Kurz and Gary Bysouth drilled one core hole.

BC Moly Ltd acquired four molybdenum properties in the Terrace area. Preliminary fieldwork was conducted at **Molybdenum Creek** (MINFILE 103I 016), 10 km north of Terrace.

### *SMITHERS-HAZELTON AREA*

Blue Pearl Mining Ltd optioned the **Davidson** molybdenum deposit (93L 110) from Don Davidson of Smithers. Formerly known as the Yorke-Hardy deposit after its discoverer and Glacier Gulch after its location on Hudson Bay Mountain, Blue Pearl renamed the deposit after Don Davidson who maintained the integrity of the database for 25 years. Between 1965 and 1980, the deposit was explored by 2600 metres of underground development and 58 000 metres of core drilling. This data was used by Blue Pearl to establish a NI 43-101 compliant resource (measured plus indicated) of 230 million tonnes grading 0.12% molybdenum, at a cutoff of 0.06% Mo. Blue Pearl proposes to mine higher grade ore and ship it to an existing mill with a molybdenum circuit, such as Endako or Huckleberry. Although optimal grade for this scheme is not established, the deposit contains a high-grade core of 4.89 million tonnes (measured plus indicated) averaging 0.39% Mo.

The molybdenum deposit is genetically related to a blind multiphase intrusion two kilometres within Hudson Bay Mountain. Much of the quartz-molybdenite stockwork is in older (Jurassic) volcanic and intrusive rocks, which are so strongly silicified by younger intrusions (late Cretaceous granodiorite and intrusive rhyolite) as to obscure their origin (D. Davidson, pers.

comm.). Work done on the property included re-opening the access road to the 1066-metre elevation adit and re-establishing ventilation, compressed air and electrical services underground (Figure 2.17). Baseline environmental studies required for Environmental Assessment were initiated but, at time of writing, definition of the high-grade core by a 5000-metre underground drill program had not started. Also planned, is a pilot drillhole for a new adit at about 700-metre elevation. The property is located 10 km west of Smithers.

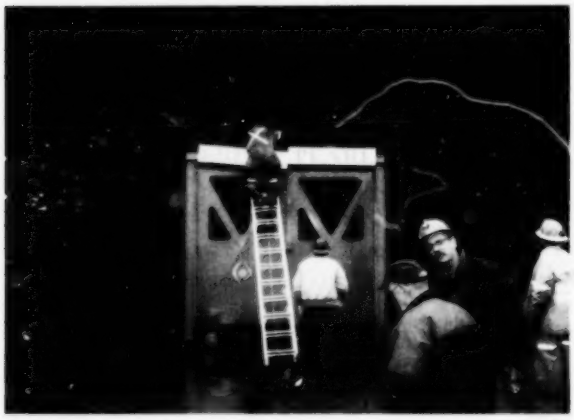

Figure 2.17. Erecting the sign above the new doors at the 1066-level portal, Davidson molybdenum deposit.

North American Gem Inc completed geological mapping and prospecting and drilled seven core holes at the **Louise Lake** copper-gold porphyry prospect (MINFILE 93L 079) under an agreement with Firestone Ventures Inc. Previous operators identified a tabular, gently dipping mineralized zone estimated (pre NI 43-101) to contain 50 million tonnes grading 0.3% copper, 0.3 g/t gold, 0.02% molybdenum with 0.9% arsenic. The deposit is unusual in that tennantite is the principal copper mineral, occurring as disseminations and in quartz stockwork. Mineralization is developed in felsic intrusive and volcanic rocks, which are difficult to distinguish due to similar grain size and strong pyrite-sericite alteration. The volcanic strata are correlated with the Cretaceous Rocky Ridge Formation because they are intercalated with polymictic conglomerate, arkose and greywacke of the Skeena Group. The 060° trending Coal Creek fault immediately to the south separates the Cretaceous sequence from older Hazelton Group rocks. Drilling of 100-metre step-out holes tested the Main zone to the west and to depth along its 30° dip. Assay intercepts are up to 192 metres wide with copper, gold and molybdenum values broadly similar to the resource average. An updated resource estimate is anticipated. The surface program, conducted after winter drilling, identified three nearby targets to be drilled in early 2006. One target is south of the Coal Creek fault, previously thought to limit the mineral system. The Coal Creek coal deposit occurs 3 km southwest of the Louise Lake deposit and is also scheduled for drilling in early 2006 (see Coal Projects below).

At **Lakeview** (MINFILE 93L 030), Cangold Limited began a drill program in December that was in progress during preparation of this report. The property is 10 km north of Houston. Chalcopyrite and specularite, locally massive and crudely banded, are found with pyrite and sphalerite in andesite breccia, as an apparently conformable zone 400 metres long. Epidote, minor limestone and hematitic chert also occur in the mineral horizon. Aphyric rhyolite, assigned to the Telkwa Formation (Hazelton Group) overlies the mineral horizon. Eight drillholes are planned, totaling about 800 metres in length.

Amarc Resources Ltd explored the **Natlan** claims for a porphyry copper deposit by drilling two core holes. Work in 2004 delineated a gold soil anomaly 500 metres wide by more than 1000 metres long, derived from a granodiorite stock with fracture-filling veins of auriferous arsenopyrite. Results are not available but the claims were returned to the vendor.

### *BABINE AREA*

Pacific Booker Minerals Inc advanced the **Morrison-Hearne Hill** project by drilling 700 metres of P-size core to recover a metallurgical test sample, and a further 4 holes totaling about 1000 metres to complete resource definition. Three ore types are identified for metallurgical study; mineralized biotite feldspar porphyry, mineralized Hazelton sedimentary rocks, and fracture-filling clay-carbonate altered rock. The Morrison porphyry copper deposit (MINFILE 93M 007), located 65 km northeast of Smithers, is estimated to contain 86 892 000 tonnes grading 0.45% copper and 0.257 g/t gold, approximately 97% is classified as Measured and Indicated resources. The waste to ore ratio is 1.44. Included in the waste are 28 152 000 tonnes grading 0.278% copper and 0.123 g/t gold that would be placed on a low-grade stockpile and processed later. The suggested milling rate is 25 000 tonnes per day and capital costs are estimated at $175.2 million. Drilling will resume early in 2006 to complete pit geotechnical drilling and to collect hydrological data that is required to complete environmental assessment.

Exploration of the **Fireweed** silver-lead-zinc prospect (MINFILE 93M 151) was revived by Argentor Resources Ltd. Fireweed is a massive and disseminated sulphide deposit that is stratabound within Skeena Group sedimentary rocks and associated with rhyolite dikes and sills. An historic resource is not compliant with NI 43-101; 580 000 tonnes grading 342 g/t silver, 1.34% lead and 2.22% zinc across an average width of 4.75 metres. Various ore deposit models have been used to explore the property, including VMS, manto and sandstone lead. Argentor performed an IP survey, in expectation of drilling in 2006. The property is near Babine Lake, 50 km northeast of Smithers.

Grizzly Diamonds Ltd began exploration of two optioned properties at **French Peak** 65 km northeast of Smithers. Geological mapping and sampling were conducted on the Ute and Rio polymetallic silver-gold-copper-lead-zinc veins (MINFILE 93M 015). Further work is planned to select drill targets.

### *HOUSTON-TAHTSA AREA*

CJL Enterprises Ltd partnered with Lorne Spence to drill 2 core and 13 percussion holes on the **Sam** claims (MINFILE 93L 260) located 4 km west of the closed Equity Silver mine. The target is an epithermal silver-gold-copper deposit like Equity Silver. Recently the felsic pyroclastic rocks at Equity Silver were dated at 113.5 Ma (D. MacIntyre, pers. comm.), which correlates them to the Rocky Ridge Formation, a sequence of mainly subaerial volcanic rocks. The two core holes at Sam penetrated a sequence of feldspar-phyric andesite, which may correlate with the Volcanic Flow division at Equity, underlain by polymictic volcanic cobble conglomerate (the Coarse Clastic division at Equity) with intercalated felsic pyroclastic rocks. The latter exhibit weakly developed alteration similar to that associated with the Equity Silver deposit.

At **CR** (MINFILE 93L 269), 15 km south of Houston, Manson Creek Resources Ltd drilled 8 holes (1580 m) to explore below stockwork-mineralization uncovered by trenching in 2004 (Figure 2.18). Two intrusive phases are present: a medium grained biotite-hornblende granodiorite and an apparently older quartz-porphyry rhyolite. These cut chloritic andesite and volcanic conglomerate of the Telkwa Formation. In the granodiorite, mafic minerals and feldspar are altered to sericite; feldspars appear pale green. Biotite hornfels is evident in the andesite. A pyrite-chalcopyrite-potassium feldspar stockwork is developed in the granodiorite whereas the rhyolite hosts a quartz-molybdenite stockwork. Best examples of the two styles of mineralization are hole 05CR03, which intersected 0.51% copper, 0.016% molybdenum over 63.6 metres, and hole 05CR07, which cut 0.086% molybdenum across 3.9 metres of quartz porphyry. The mineralized zone is 900 metres long by 100 to 180 metres wide and open to the west. Continued drilling is anticipated in 2006.

Aumega Discoveries Ltd. explored the **Poplar** porphyry copper-molybdenum deposit (MINFILE 93L 239), 45 km south of Houston. Prior to NI 43-101, Utah Mines Ltd calculated in a full feasibility report an indicated resource of 196 million tonnes grading 0.37% copper and 0.01% molybdenum. Mineralization is related to a Bulkley granodiorite pluton, the Canyon Creek stock. Work in 2005 comprised approximately 3000 metres of diamond drilling divided between the Canyon Creek zone and the unexplored China Creek stock, 3 km to the east. Results are not available at time of writing.

Figure 2.18. Regan Chernish, president of Manson Creek Resources Ltd, examines copper-molybdenum mineralization in a trench on the CR property.

Goldsource Mines Inc drilled 4 holes totaling 595 metres on the **Rox** epithermal gold-silver property, to test coincident IP and soil geochemical anomalies. The claims are 70 km south of Houston. The holes intersected narrow quartz-carbonate veins containing base metal sulphide minerals with low gold and silver values.

At the **Seel** property (MINFILE 93E 105), Gold Reach Resources Ltd concluded its initial drill program in March and began a second program in December 2005. The claims are 110 km south of Houston, and just 7 km from the Huckleberry copper mine. Between February and March 2005, eight holes were drilled totaling 1740 m. Significant porphyry-style mineralization was intersected in several holes. Hole S05-08, the best hole of the first program, intersected 0.44% copper and 0.46 g/t gold over 102 metres. A Bulkley granodiorite stock with disseminated pyrite and very fine chalcopyrite is overprinted by a quartz stockwork locally containing chalcopyrite and magnetite (Figure 2.19). A 44 km three-dimensional IP and magnetic survey was carried out to provide targets for more exploration drilling. An 18-hole, 4000-metre drilling program began in December.

Figure 2.19. Geologists Hans Smit and Peter Daubney log core from the Seel porphyry copper property.

New Cantech Ventures Inc reactivated exploration of the **Lucky Ship** molybdenum prospect (MINFILE 93L 053), located near the Nanika River 65 km southwest of Houston. Work comprised construction of a 1.3 km road to allow highway vehicles to access the property from current logging roads, a 31-kilometre IP and magnetic survey, and 25 drillholes totaling 3804 metres. Amax Exploration Inc explored Lucky Ship between 1963 and 1968 and outlined an open-pit resource of 18.1 million tonnes grading 0.095% molybdenum (Figure 2.20). Mineralization is associated with a 150-metre diameter granite plug that is within a larger, irregularly shaped body of quartz-feldspar porphyritic rhyolite, both of Eocene age. A high silica zone and the molybdenum zone occur as concentric shells surrounding the granite plug. In plan-view, the molybdenum zone forms a donut about 35 metres wide. Current drilling confirmed the Amax model with best drill intercepts of 66 metres grading 0.14% molybdenum in LS05-31 and 187 metres grading 0.095% molybdenum in LS05-36 (Figure 2.21). Additional drilling is planned during the winter in early 2006.

Figure 2.20. Lucky Ship molybdenum property, salvaging old drill core from collapsed racks.

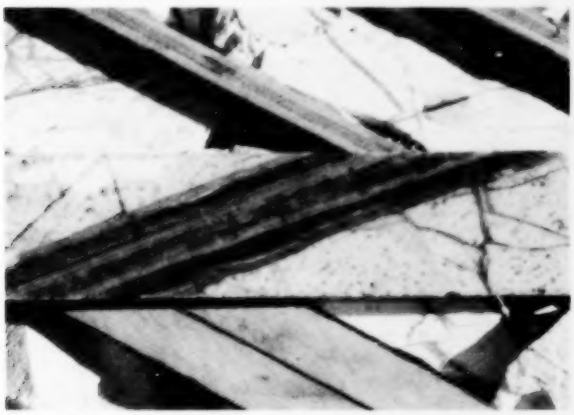

Figure 2.21. Lucky Ship, banded quartz-molybdenite vein.

At the **Whiting Creek** porphyry molybdenum prospect (MINFILE 93E 112) 8 km north of Huckleberry mine, Huckleberry Mines Ltd drilled seven holes to test for mineralization between the Creek and Ridge zones. Results were not encouraging but the Ridge zone remains open to the southwest and further drilling is planned.

Torch River Resources Ltd acquired the **Red Bird** molybdenum property, 125 km south of Houston, and re-sampled historic drill core. Craigmont Mines Limited explored the Red Bird porphyry molybdenum deposit (MINFILE 93E 026) from 1965 to 1981, delineating a substantial molybdenum resource, but subsequently land within 200 m of the deposit was incorporated into Tweedsmuir Park.

## COAL EXPLORATION

Fortune Minerals Limited advanced the **Klappan** anthracite coal project through requirements of the Environmental Assessment process toward approval of a 1.5 to 3 million tonne per year open pit mine. The Klappan-Groundhog coalfield is in the northern Bowser Basin, a mid to late Jurassic marine basin filled with clastic sediments that culminated in a deltaic environment including coal measures. Anthracite is a premium coal with the highest rank, carbon and energy content, and lowest moisture and volatile content of all coals. It can be used in steel manufacture as an ultra-low volatile PCI coal (pulverized coal injection) and in a wide variety of specialty applications including water purification, briquettes and as a metallurgical reductant. Coal resources at Klappan (MINFILE 104H 021) occur in four deposits: Lost Fox, Hobbit-Broatch, Summit and Nass, that contain 107.9 million tonnes classified as Measured, 123 million tonnes as Indicated and 2.572 billion tonnes classified as Inferred and Speculative.

Work in 2005 comprised drilling, bulk sampling, engineering, and collection of environmental and socioeconomic baseline data. Objectives of the 24-hole (3095 m) drill program were: to improve confidence in structural interpretation within the Lost Fox deposit, to test for additional reserves within and adjacent to proposed pit limits, to provide geotechnical information, to evaluate the risk of acid leaching (ARD) of contaminants from rock dumps, and to study groundwater quality and flows and the impact of pit dewatering (Figure 2.22). Transportation options include the BC Rail line (acquired in 2004 by CN Rail), which requires 94 km of new construction and additional upgrading of existing track, or 100 km of new road to connect with Highway 37 at the Bell-Irving River (at Bell II). The latter option would link Klappan to the port of Stewart, whereas the rail upgrade would result in the coal being exported via the Ridley terminal at Prince Rupert.

Forty kilometres west of Smithers, West Hawk Development Corp acquired the **Coal Creek** thermal coal deposit (MINFILE 93L 147). Drilling is planned in early 2006. Work by Crows Nest Resources Ltd from 1981-85 determined that two principal coal seams on the property occur near the base of the Lower Cretaceous Skeena Group; the lower seam is reported up to 6 metres thick.

Figure 2.22. Klappan coal project, Bill Hanson, geologist, and Bob Edzerza, camp manager, work in the core trailer.

## EXPLORATION FOR INDUSTRIAL MINERALS AND GEMSTONES

Ascot Resources Ltd submitted a Project Report to the Environmental Assessment Office for its proposed **Swamp Point** aggregate mine on October 13. Swamp Point (MINFILE 103O 017) is located on the Portland Canal, 50 km south of Stewart. Included in the project is a ship-loading facility for vessels of up to 70 000 tonne (dwt) cargo capacity and associated conveyor system, so that up to 3 million tonnes of product can be shipped annually. The California market is targeted. The estimated resource is 52 million tonnes. Capital cost is estimated at US $25 to $40 million depending on whether mining equipment is purchased or contracted, and 20-50 people could be employed, depending on production rate. Swamp Point is a fluvial deposit; principally clean white sand that is preserved from recent stream erosion as an isolated, flat-topped bench 150 metres above sea level (Figure 2.23). The Swamp Point deposit is interpreted as the eroded remnant of a paleodelta derived from a glacial-age Donahue Creek. Either the land level was depressed 150 metres or, alternatively, a glacier in Portland Canal may have ponded glacial outwash from the Donahue valley in a lake above sea level. Earlier in the year, Ascot completed resource definition by drilling thirteen 9-inch diameter (23 cm) holes with a Becker hammer drill. A layer of peat, 1 to 3 metres thick was excavated to facilitate drill access. Organic acid derived from the peat produced an iron precipitate that cemented the top layer of sand into hardpan. The hardpan layer prevented drainage of surficial water until the large diameter percussion holes drained the swamp at Swamp Point.

Beacon Ventures Inc, a private BC company, proposes to extract 1.7 to 3.4 million tonnes of gravel annually from the **Bear River** where it enters the Portland Canal in the community of Stewart. The gravel would be sorted and loaded onto bulk marine carriers for shipment to Pacific Rim markets. Removal of gravel from the rapidly aggrading river channel will alleviate the semi-annual flood risk to Stewart and the possible eventual washout of the bridge on Highway 37A. Freeboard at the bridge is being progressively reduced as the riverbed rises. A flood could interrupt shipment of mine products through the port of Stewart.

A private company, 24/7 Timber Limited, proposes to develop a granite rock quarry at **Tyee**, 25 km east of Prince Rupert on the Skeena River. Rock from the Ecstall hornblende quartz diorite pluton (Figure 2.24) would be used as ballast for harbour protection and in high-strength asphalt required for the port expansion in Prince Rupert. A four-hole drill program recovered 760 metres of core that was subjected to petrographic study and a broad array of test work to determine strength, resistance to salt water corrosion, stability in cement, resistance to wave action, and durability in alternating wet and dry (i.e. tidal) conditions. The company also prepared polished tiles to test the market for higher value dimension stone.

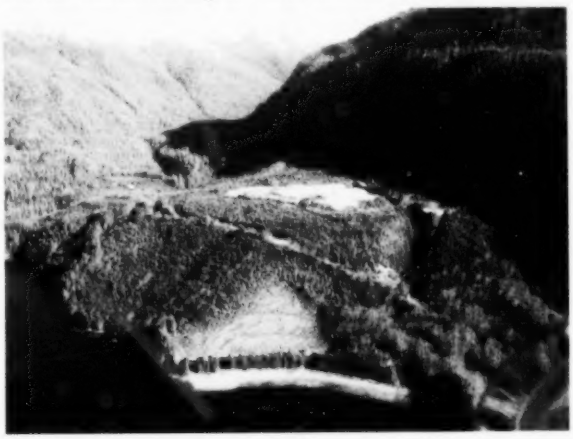

Figure 2.23. Swamp Point on the Portland Canal.

Andris Kikauka and John Ganter investigated occurrences of blue beryl (aquamarine) on two mineral properties, at **Cassiar beryl** (MINFILE 104P 024) and 15 km to the north at Harvey Lake. The claims are on the west flank of the Horseranch Range, 50 km south of Watson Lake.

Figure 2.24. Tyee property, the Ecstall hornblende quartz diorite (or tonalite).

## ACKNOWLEDGEMENTS

The author is very thankful for the contributions made by mine staff, exploration geologists and prospectors working in northwest B.C. This report would not be possible without their sharing of information. Also, their hospitality while visiting projects is greatly appreciated. Special thanks also to Doug Flynn, Bruce Graff, Jill Pardoe and Elaine Konschuh for their help in the Smithers office of Energy, Mines and Petroleum Resources. However, errors or omissions remain the responsibility of the author.

# CENTRAL REGION

**By Bob Lane, PGeo**
Regional Geologist, Prince George

## SUMMARY AND TRENDS

The level of exploration activity in the Central region improved slightly from the robust level witnessed in 2004. There was a significant increase in the number of large reconnaissance-style exploration programs. These programs assessed large segments of several different geological terranes and included airborne magnetic and radiometric surveys, grid-based Induced Polarization (IP) surveys and broad geochemical sampling programs. This regional activity was spurred on by the province's conversion to on-line electronic mineral claim staking which enabled explorationists to readily acquire tenure over vast areas. Targets of these programs included sediment-hosted gold vein systems in Proterozoic rocks of ancestral North America and alkalic and calc-alkalic porphyry copper-gold deposits in Late Triassic to Early Jurassic arc rocks of the Quesnel Terrane. Strengthening metal markets also rekindled interest in some mineral belts, such as the Gataga zinc-lead-silver district, that have been dormant for several years.

Exploration expenditures are forecast to total approximately $34.5 million, up marginally from the 2004 estimate of $33.0 million (Figure 3.1). Exploration drilling decreased approximately 15 000 metres (or 9%) to an estimated 145 000 metres (Figure 3.2). The number of major exploration projects equalled last years total of 38.

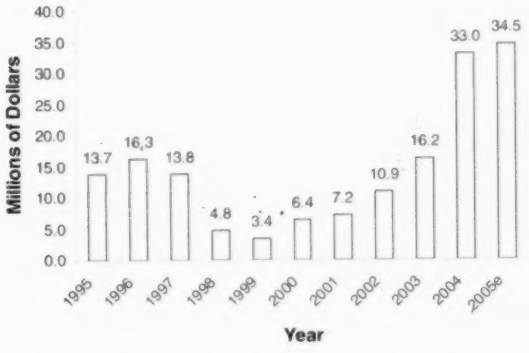


Figure 3.1. Annual Exploration Expenditures, Central Region.

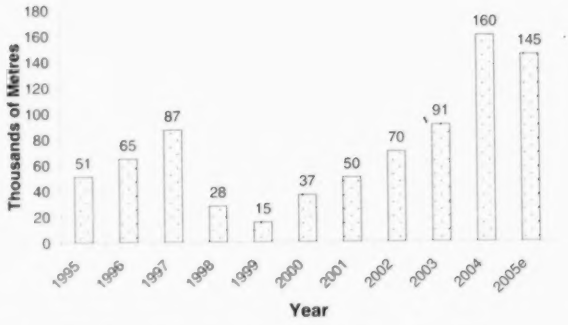


Figure 3.2. Annual Exploration Drilling, Central Region.

Bulk tonnage copper-gold deposits, as in previous years, were the most popular exploration target in the region. Seventeen projects targeted either alkalic porphyry systems, calc-alkalic porphyry systems or iron oxide-copper gold (IOCG) systems. Epithermal and mesothermal gold veins, stockwork zones and related high-grade gold replacements accounted for thirteen of the major projects. Zinc-lead-silver deposits (Sedimentary-Exhalative and Carbonate Replacement) accounted for three large programs. There were two major programs assessing skarns, two major programs exploring for polymetallic volcanogenic massive sulphide deposits and one major program that test a platinum group element (PGE) prospect.

Mining in the region was highlighted by the reopening of the Mount Polley copper-gold mine in the spring. The other two major open pit operations in the region, namely the Kemess gold-copper mine and the Gibraltar copper-molybdenum mine, continued to operate efficiently and enjoyed the benefit of year-long buoyant metal prices. A feasibility study was conducted on the dormant QR mine.

## OPERATING METAL MINES

### *Mount Polley*

Imperial Metals Corporation reopened its Mount Polley copper-gold mine in March, 2005, after a 3.5 year hiatus. The mine, located 8 kilometres southwest of Likely between Polley and Bootjack lakes, was originally commissioned in 1997. Mount Polley operated until 2001

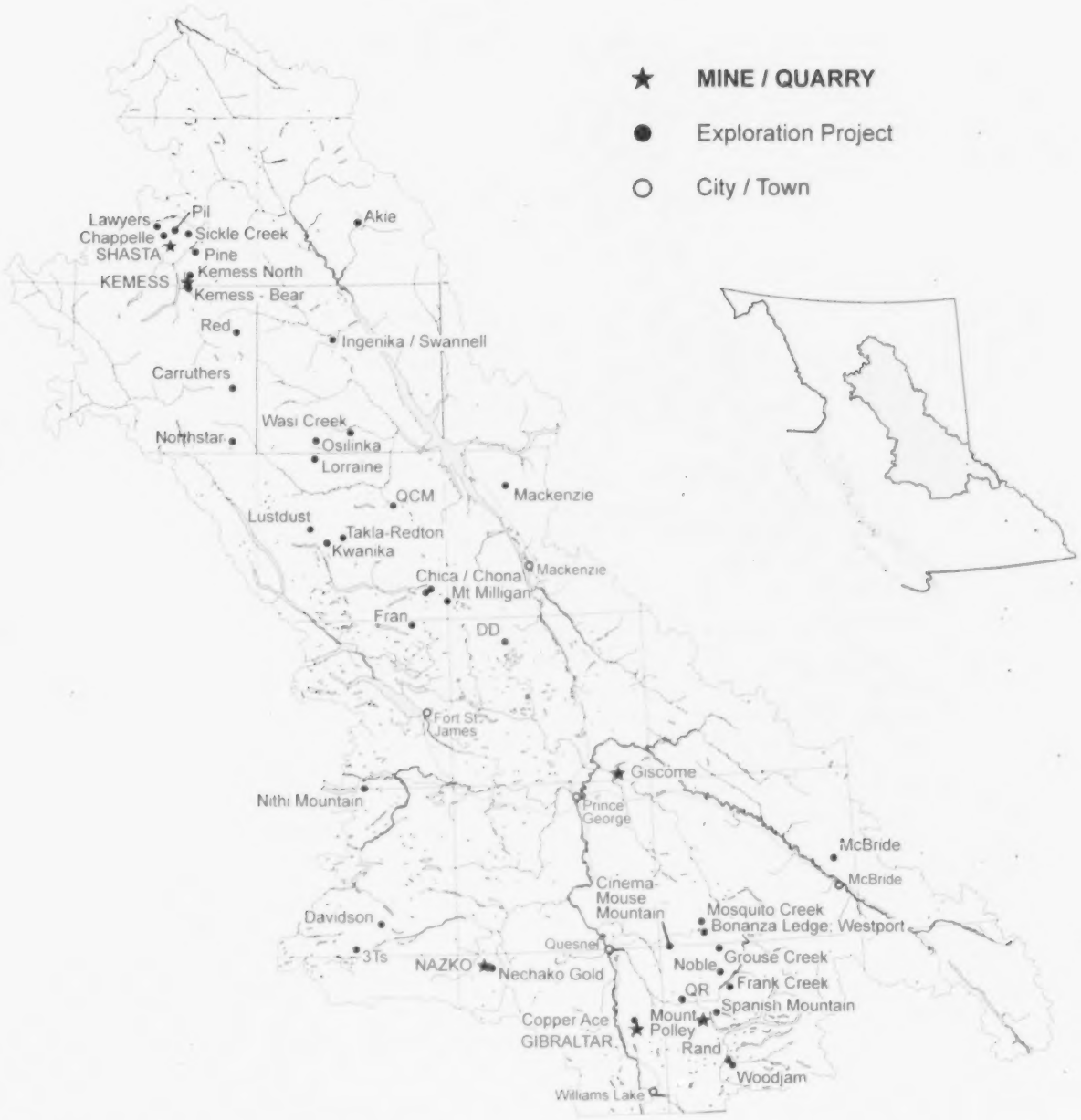


Figure 3.3. Operating mines, major exploration projects and selected smaller exploration projects, Central Region, 2005

producing 59 000 tonnes (131 million pounds) of copper and 11 500 kilograms (370 000 ounces) of gold.

The Mount Polley property (MINFILE 093A 008 and 164) covers Upper Triassic to Lower Jurassic volcanic-plutonic arc rocks of the Quesnel Terrane. The deposit ishosted by a high-level, composite alkalic intrusive complex that has a late Triassic age of 202 Ma. Mineralization typically occurs within a number of intensely potassium-altered hydrothermal breccias associated with monzonite and plagioclase porphyry.

Discovery of high-grade mineralization at the Northeast zone in 2003, and the subsequent identification of an economic deposit through systematic drilling, led to the decision to reopen the mine. Fortunately, and unlike 1998 when the mine was first commissioned, copper and gold prices increased steadily throughout the year further strengthening the economics of the mine. Additional definition drilling of the Northeast zone (or Wight pit) increased the proven and probable reserves of the deposit to 9.144 million tonnes averaging 0.88% Cu, 0.29 g/t Au and 6.4 g/t Ag. Proven and probable reserves for the mine (Wight, Bell and Springer deposits) as of February, 2005, totalled 44 million tonnes grading 0.45% copper and 0.30 g/t gold. In addition, total measured and indicated resources for the property are 68.5 million tonnes grading 0.37% Cu and 0.26 g/t Au.

Imperial Metals also outlined a significant resource in the Southeast zone, located south of the main waste rock dump. When converted to a proven reserve the Southeast zone is expected to increase the mine life of Mount Polley to about seven years.

Development of the Wight pit (Figure 3.4) began to contribute ore to the mill in July. The tenor of ore from the Wight pit is about three times that of the ore historically mined at Mount Polley. Ore from the Wight pit is blended with material from the low grade stockpile and ore from the expanded Bell pit. Estimated metal production for the year is 1060 kilograms (34 000 ounces) of gold, 14 000 tonnes (30 million pounds) of copper and 6660 kilograms (214 000 ounces) of silver.

Figure 3.4. Development of the new Wight Pit, Mount Polley mine.

***Gibraltar***

Taseko Mines Ltd and operating partner Ledcor Mining Ltd reopened the Gibraltar (MINFILE 093B 006, 007, 011-013 and 051) open pit copper-molybdenum mine near McLeese Lake in October, 2004. The Gibraltar deposits occur within tonalite of the Late Triassic Granite Mountain batholith. The batholith intrudes Cache Creek Group rocks between the Pinchi and Fraser River fault systems. Mining is currently taking place in the Pollyanna stage IV pit (Figure 3.5). When reserves at Pollyanna are exhausted, mining will proceed to the Granite Lake pit (stages III and IV), the Pollyanna-Gibraltar East Connector zone (PGEC) and the 98 Oxide zone.

A detailed review of the PGEC and Granite Lake deposits enabled the company to expand the overall proven and probable reserve base for the mine. As of September 30, 2005, these reserves were estimated at 176 million tonnes averaging 0.31% Cu and 0.01% Mo. Definition drilling of the Granite Lake and PGEC deposit areas, which will be resumed in 2007, is expected to further increase the reserve base of Gibraltar.

Estimated production for 2005 is 26 000 tonnes of copper and 225 000 kilograms of molybdenum. Fine tuning of the copper and molybdenum circuits took place throughout the first and second quarters of 2005 resulting in significant improvements in recoveries for both metals. An engineering study was initiated to evaluate the economics of increasing concentrate production by 25%.

The mine's existing SX-EW copper recovery plant is not yet operational, but Taseko plans to prepare heap leach pads part way through 2006 in anticipation of starting up this efficient facility in 2007. Taseko is still investigating the prospect of constructing a hydrometallurgical refinery on the mine site which would produce cathode copper and dramatically lower present concentrate transportation, smelting and refinery costs.

Figure 3.5. Mining in the Pollyanna stage IV pit, Gibraltar mine.

### *Kemess*

Northgate Minerals Corporation owns and operates the Kemess open pit gold-copper mine (Figure 3.6) located approximately 430 kilometres northwest of Prince George in the Toodoggone region. Mining of the Kemess South deposit takes place from a single open pit developed on a zone of calc-alkalic porphyry mineralization hosted by Late Triassic monzonites of the Black Lake intrusive suite. In 2005, mill throughput averaged approximately 50 000 tonnes per day. Forecast metal production for the year was 8700 kilograms (280 000 ounces) of gold, 33 100 tonnes (73 million pounds) of copper and 10600 kilograms (340 000 ounces) of silver making Kemess South British Columbia's single largest gold producer.

Northgate Minerals submitted an Environmental Impact Assessment report on the Kemess North project to the joint British Columbia Environmental Assessment Office - Canadian Environmental Assessment Agency panel for review. The proven and probable reserve estimate for Kemess North is 414 million tonnes grading 0.16% copper and 0.307 g/t gold. Approval would extend the mine life of the Kemess operation to approximately 2020. The proposal includes utilizing Duncan Lake for permanent storage of 397 million tonnes of tailings and up to 325 million tonnes of waste rock.

Figure 3.6. Mining in the Kemess South pit, Kemess mine.

### *Shasta*

Sable Resources Ltd mined approximately 5000 tonnes of ore from an open cut at its **Shasta** gold-silver mine near Black Lake, north of the Kemess mine. The ore was trucked to the company's nearby Baker mill where it was processed into dore bars. Reported metal production was 15.2 kilograms (488 ounces) of gold and 320.8 kilograms (10 314 ounces) of silver.

## INDUSTRIAL MINERAL QUARRIES

The **Nazko** lava rock quarry, centred on the Nazko volcanic cone west of Quesnel, is operated by Canada Pumice Corporation, a subsidiary of Crystal Graphite Corporation. Successful marketing of the porous tephra, which is suitable for construction, landscaping, light-weight aggregate and horticultural applications, led to an increase in production to an estimated 25 000 to 30 000 cubic metres and sales of approximately half of that volume.

A four-month mining campaign at CN Rail's **Giscome** basalt quarry, near Eaglet Lake northeast of Prince George, produced 386 000 tonnes of crushed and screened basalt for use as railroad ballast on the company's regional main lines (Table 3.1).

## EXPLORATION PROJECTS

### *Toodoggone Camp*

Drilling by Northgate Minerals Corporation immediately east of the proposed **Kemess North** pit development (and east of the East Creek fault) identified a possible extension to the deposit. The zone, termed **Kemess North Offset,** was first intersected by drill hole KN-05-24 which cut 308 metres averaging 0.31 g/t Au and 0.24 % Cu. Additional holes confirmed the presence of a major new bulk tonnage target and established the zone as a priority drilling target for 2006. The company also tested several other targets on claims that enclose the Kemess North area, including the **Kemess East** and **Nugget** porphyry gold-copper prospects, the **Hilda** structurally-controlled gold zone, and the **Duncan Ridge** and **Nor 1** skarn prospects (Table 3.2).

South of the Kemess mine Northgate continued to evaluate its **Bear** claims. A total of 17 core holes were drilled to test anomalies suggestive of buried porphyry systems that had been defined by an earlier airborne magnetic and radiometric survey and IP survey.

Finlay Minerals Ltd continued to explore its **Pil** property (MINFILE 094E 029, 083, 213 and 216) for both bulk tonnage porphyry copper deposits and high-grade gold-silver epithermal deposits. The property is centered

## TABLE 3.1. FORECAST MINE PRODUCTION, CENTRAL REGION, 2005

| Mine | Operator | Deposit Type / Commodity | Forecast Production in 2005 (tonnes or kilograms) | Number of Employees | Proven and Probable Reserves (on Jan. 1, 2005, unless stated otherwise) |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| Gibraltar | Taseko Mines Ltd / Ledcor Mining Ltd | Calcalkalic porphyry Cu-Mo | 26 000 t Cu, 225 t Mo | 252 | 179 000 000 t at 0.31% Cu and 0.01% Mo (as of September, 2005) |
| Kemess | Kemess Mines Ltd (Northgate Minerals Corporation) | Calcalkalic porphyry Au-Cu | 8700 kg Au, 33 100 t Cu | ~475 | Kemess South (Proven): 86 600 000 t at 0.67 g/t Au and 0.22% Cu; Kemess North (Proven & Probable) 414 000 000 t at 0.307 g/t Au and 0.16% Cu |
| Mount Polley | Imperial Metals Corporation | Alkalic porphyry Cu-Au-Ag | 14 000 t Cu, 1060 kg Au, 6660 kg Ag | ~280 | 44 000 000 t at 0.45 % Cu & 0.30 g/t Au (as of February, 2005) |
| Shasta | Sable Resources Ltd | Epithermal Vein Au-Ag | 15.2 kg Au, 321 kg Ag | ~10 (seasonal) | n/a |
| **Industrial Minerals** | | | | | |
| Giscome | Canadian National Railway Company | Basalt | 386 000 t railroad ballast | ~10 (seasonal) | n/a |
| Nazko | Canada Pumice Corp (Crystal Graphite Corp) | Lava rock | 30 000 cubic metres | ~10 (seasonal) | n/a |

approximately 35 km north of the Kemess mine and is underlain predominantly by the Black Lake Intrusive Suite and volcanic rocks of the Toodoggone formation. The northwest-trending Pillar fault dissects the property. Drilling of the Northwest and Silver Ridge/Silver Ridge North porphyry targets identified strongly altered monzonite and quartz diorite, but modest copper-molybdenum grades. Prospecting and rock geochemical sampling led to the discovery of the **Atlas East** epithermal gold-silver prospect (Figure 3.7). Silicified pyritic andesite was traced over an area measuring 500 metres by 200 metres. Surface grab samples with visible electrum and argentite assayed up to 72.4 g/t Au and 2187 g/t Ag. Two holes were drilled to test the east end of the showing. They intersected narrow intervals of lower grade mineralization but the prospect warrants futher investigation.

Figure 3.7. Exploration geologists Warner Gruenwald and Rob Montgomery on the Atlas East epithermal vein prospect, Pil property.

Prior to arranging an option agreement with Placer Dome Ltd, Stealth Minerals Ltd conducted a modest prospecting and geochemical sampling program on parts of its **Sickle Creek** property, located north of the Finlay River. In 2006 Placer will explore at least four of the eleven claim blocks that Stealth controls. Prominent among the targets is the **Sickle-Griz** epithermal gold-silver system (MINFILE 094E 237). This target is a set of banded quartz-calcite-sulphide veins that occurs in silicified andesite lavas that correlate with the Metsantan member of the Toodoggone formation. Two other promising showings yet to be drilled include **Sofia** (MINFILE 094E 238), a porphyry gold-copper showing on the Toodoggone River, and the **Alexandra** porphyry prospect, centred west-southwest of the confluence of Jock Creek and Toodoggone River. The **Paula** bulk tonnage copper prospect, discovered in 2005, is defined by a 1500 metre by 2000 metre area of anomalous rock geochemistry where assays averaged 0.46% Cu. The occurrence is in propylitically altered, bladed feldspar mafic lavas of the Triassic Takla Group.

Cascadero Copper Corporation, a newly formed sister company to Stealth Minerals, examined the **Pine** porphyry copper-molybdenum-gold property (MINFILE 094E 016, 045, 047-048, 082 and 237) near the Finlay River, north of the Kemess mine. The property is underlain by monzonitic intrusions of the Late Triassic to Early Jurassic Black Lake suite and coeval volcanic rocks. Cascadero drilled eight holes on the **Fin** target and intersected interesting, but sub-economic concentrations of copper, molybdenum and gold. Four holes were drilled on the **Mex** target (094E 057), one on the main **Pine** deposit and four north of the Finlay River on the **Ryan Creek** prospect. Results for the latter three targets were not available at press time.

## TABLE 3.2. MAJOR EXPLORATION PROJECTS, CENTRAL REGION, 2005

| Property | Operator | Minfile (NTS) | Commodity | Deposit Type | Work Program |
|---|---|---|---|---|---|
| 3Ts | Southern Rio Resources Ltd | 093F 055, 068 | Au-Ag | Epithermal Vein | A, P, G, GC, DD |
| Akie | Mantle Resources Ltd | 094F 031 | Zn-Pb-Ag | Sed-Ex | DD (~2000m, 4 holes) |
| Blackwater-Davidson | Southern Rio Resources Ltd | 093F 037 | Au-Ag | Epithermal Vein | A, DD (939m, 5 holes) |
| Canboo Gold Quartz | International Wayside Gold Mines Ltd | 093H 019 | Au | Vein, Replacement | A, G, GC, DD (4518m, 26 holes) |
| Carruthers | Maxtech Ventures Ltd | 094D 172 | Cu-Zn-Pg-Ag-Au | Volcanogenic Massive Sulphide | DD (405m, 4 holes) |
| Chappelle (Baker) | Sable Resources Ltd | 094E 026 | Cu-Au | Calcalkalic Porphyry | DD (609m, 2 holes) |
| Chica / Chona | Amarc Resources Ltd | (093N/01 & 08) | Au-Cu | Calcalkalic Porphyry | A, IP, DD (960m, 9 holes) |
| Cinema - Mouse Mountain | Richfield Ventures Corp | (093G/01 & 08) | Cu-Au | Alkalic Porphyry | AB-MG, AB-RD, G, GC, TR |
| Croy-Bloom (incl Davie Creek) | Serengeti Resources Inc | 094D 015, 039, 113 | Au-Cu-Mo | Calcalkalic Porphyry | G, GC, IP, MG |
| DD | Almo Capital Corp | (093J/11) | Au-Cu-PGE | | GC, GP, DD (7 holes planned) |
| Fran | Yankee Hat Industries Corp | 093N 207 | Au-Cu | Alkalic Porphyry | A, P, G, GC, DD (3028m, 16 holes) |
| Frank Creek | Barker Minerals Ltd | 093A 152 | Cu-Zn-Pg-Ag-Au | Volcanogenic Massive Sulphide | DD (4 holes) |
| Gibraltar | Taseko Mines Ltd | 093B 005-008, 011-012, 051, 061-063 | Cu-Mo | Calcalkalic Porphyry | CD & DD (6990m, 40 holes) |
| Grouse Creek | Golden Caribou Resources Ltd | 093H 003, 008 | Au | Mesothermal Vein, Replacement | A, G,GC, DD (6252m, 44 holes) |
| Ingenika Swannell | Bard Ventures Ltd / Selkirk Metals Corp | 094C 002-005, 086 | Zn-Pb-Ag | Replacement | DD (993m, 7 holes) |
| Kemess - Bear | Northgate Minerals Corporation | (094E 02) | Au-Cu | Calcalkalic Porphyry | A, G, DD (5786m, 17 holes) |
| Kemess North area | Northgate Minerals Corporation | 094E 021 | Au-Cu | Calcalkalic Porphyry | A, G, DD (10,372m, 23 holes), FS |
| Lawyers | Bishop Gold Inc | 094E 066 | Au-Ag | Epithermal Vein | DD (845m, 5 holes) |
| Lorraine - Jajay | Teck Cominco Limited | 093N 002, 066, 224 | Cu-Au | Alkalic Porphyry | G, GC, IP, DD (3704m, 17 holes) |
| Lustdust | Alpha Gold Corp | 093N 008-009 | Au-Ag-Cu-Zn-Pb | Skarn, Manto, Vein | A, TR, DD (5153m, 16 holes) |
| Mosquito Creek Gold | Island Mountain Gold Mines | 093H 010 | Au | Mesothermal Vein | DD (1170m, 10 holes) |
| Mount Polley | Imperial Metals Corporation | 093A 008, 164 | Cu-Au-Ag | Alkalic Porphyry | G, PD, DD (39,495m, 98 holes), FS |
| Nechako Gold (Bob) | Endurance Gold Corp | 093B 054 | Au-Ag | Epithermal Vein | A, G, P, GC, DD (422m, 3 holes) |
| Nithi Mountain | Leeward Capital Corp | 093F 006-016 | Mo | Calcalkalic Porphyry | A, G, DD (~6000m) |
| Noble | Noble Metal Group Incorporated | (093A/14) | Au | Mesothermal Vein | GC, GP, DD (881m, 3 holes) |
| Northstar | Northern Hemisphere Development Corp | 094D 032 | Cu-Ag | Volcanic Redbed Copper | DD (~1200m, ~10 holes) |
| Osilinka | Lysander Minerals Corporation | 094C 069 | Au-Cu | Alkalic Porphyry | A, GC, IP, DD (1447m, 8 holes) |
| Pil | Finlay Minerals Ltd | 094E 029, 083, 213, 216 | Au-Cu | Calcalkalic Porphyry, Epithermal Vein | A, P, G, DD (3088m, 12 holes) |
| Pine | Cascadero Copper Corp | 094E 016, 045, 047-048, 082, 237 | Au-Cu (+/- Mo) | Calcalkalic Porphyry | A, G, DD (3980m, 17 holes) |
| QCM | Canadian Gold Hunter Corp | 093N 200 | Au | Mesothermal Vein | A, DD (1802m, 9 holes) |
| QR | Cross Lake Minerals Ltd | 093A 121 | Au | Skarn | DD (1972m, 9 holes), PF |
| Rand | Wind River Resources | (093A/06) | Cu-Au | Calcalkalic Porphyry | DD (1182m, 5 holes) |
| Red | Buffalo Gold Ltd | 094D 034 | Cu-Au | Calcalkalic Porphyry | DD (626m, 4 holes) |
| Shasta | Sable Resources Ltd | 094E 050 | Ag-Au | Epithermal Vein | IP, DD (1042m, 11 holes) |
| Spanish Mountain | Skygold Ventures Ltd / Wildrose Resources Ltd | 093A 043 | Au | Mesothermal Vein | A, GC, G, RC (3377m, 30 holes), DD (7746m, 35 holes) |
| Wasi Creek | Bard Ventures Ltd / Selkirk Metals Corp | 094C 024 | Zn-Pb-Ag | Replacement | P, G, GC, AB-EM, AB-MG, DD (1054m, 7 holes) |
| Westport | Williams Creek Explorations Limited | 093H 027, 034 | Au | Mesothermal Vein | DD (1460m, 6 holes) |
| Woodjam | Fjordland Exploration Inc | 093A 078, 124 | Au-Cu | Alkalic Porphyry | A, G, RC (907m, 10 holes), DD (2018m, 6 holes) |

A = access, trail, road construction on claims; AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; AB-RD = airborne radiometrics; BU (X tonnes) = bulk sample (weight in tonnes if known); CD = condemnation drilling; CQ = coal quality testing; CT = carbonization test (coal); DD (Xm) = diamond drilling totaling X metres; EN = environmental baseline studies/monitoring, remediation work; FS = feasibility studies; G = geology, mapping, etc; GC = geochemical sampling (rock, soil, silt, etc); GD = geotech drilling; GP = geophysics (general); IP = Induced Polarization; 3D-IP; MG = magnetics; MK = marketing-primarily for industrial mineral products; MS = metallurgical studies; OB = overburden drilling; P = prospecting; PD = percussion drilling; PF = pre-feasibility studies; R = reclamation; RC = reverse circulation drilling; TR = trenching; UG (X m) = X metres of underground development; UG-BU = underground bulk sample; OP-BU = open-pit bulk sample; UT = UTEM; VLF; WT = washability test (coal)

Bishop Gold Inc completed a five-hole diamond drilling program on the plateau west of the Cliff Creek portal on the **Lawyers** (MINFILE 094E 066) property. The property hosts a low-sulphidation gold-silver vein and breccia system, part of which was mined (AGB zone) by Cheni Gold Mines Ltd from 1988 to 1992. The mine was reclaimed in 1998. Bishop is evaluating the potential for a bulk tonnage gold deposit. Drillhole 05-CC-03 intersected 3 metres grading 12.34 g/t Au within a 27-metre wide zone of silica-healed breccia grading 0.94 g/t Au.

Sable Resources Ltd drilled 11 holes on its **Shasta** epithermal vein deposit (MINFILE 094E 050), prior to its limited mining campaign, in order to confirm additional ore grade material for future mining. Sable Resources also drilled two holes into the Black Gossan zone, a bulk tonnage copper-gold target on its **Chappelle** property (MINFILE 094E 026) that encompasses the Baker mine. The zone is characterized by a large area of oxidized pyritic Takla Group andesite that coincides with a copper-gold geochemical anomaly. It may be indicative of a buried porphyry system.

***Omineca Mountains***

Buffalo Gold Ltd optioned the **Red** porphyry copper-gold property (MINFILE 094D 034), located 40 kilometres south of the Kemess mine, from Gitennes Exploration Inc. The company drilled four holes to test a northwest-trending structural corridor where previous exploration identified chalcopyrite-bearing porphyritic diorite dikes that intrude andesitic volcanics of the Takla Group.

The **Carruthers** volcanogenic massive sulphide prospect (MINFILE 094D 172), located in the upper reaches of Quenada Creek about 75 kilometres south of the Kemess Mine was examined by Maxtech Ventures Ltd. The junior company drilled several prominent geophysical/geochemical targets, but did not intersect significant mineralization.

The **Croy-Bloom** property (MINFILE 094D 139) of Serengeti Resources Inc covers some 49 square kilometres of prime porphyry copper-gold real estate in the northern Quesnel Terrane about 75 kilometres south of the Kemess mine. The company's 2005 field program identified a strong IP chargeability zone that is coincident with a broad copper-gold-cobalt soil geochemical anomaly. This prospective area, called Bloom Cirque, is a priority drill target for 2006.

A soil geochemical sampling program and IP geophysical survey conducted by Serengeti on its nearby **Davie Creek** porphyry molybdenum prospect (MINFILE 094D 113) has expanded the size of the target to a 3000 by 600 metre area. Mineralization occurs in potassically-altered porphyritic granodiorite of the northwest-trending Early Cretaceous(?) Davie Creek stock.

Further to the southeast in the Valleau Creek area, Serengeti completed a 420 line-kilometre airborne magnetic and radiometric geophysical survey on its **Kwanika** porphyry copper-gold-molybdenum property (MINFILE 093N 006). The intent of the program was to identify geophysical anomalies indicative of porphyry mineralization in heavily overburden covered areas of the Quesnel Terrane. Six such anomalies were identified and will be prioritized for drilling in 2006. Still further south the company also investigated the **Tchentlo** property for its porphyry copper-gold potential.

Joint venture partners Selkirk Metals Corp and Bard Ventures Ltd explored the **Ingenika-Swannell** (MINFILE 094C 002-005, 086) and **Wasi Creek** (MINFILE 094C 024) carbonate-hosted zinc-lead-silver properties in the Swannell Ranges. Seven diamond drill holes tested the South Grid area of the Ingenika-Swannell property, but did not encounter significant mineralization. A modest electromagnetic and magnetic survey was flown over part of the Wasi Creek property. It was followed up by a seven-hole diamond drilling program that targeted the Carrie and Par horizons. Three of the holes intersected zinc-lead mineralization on the Par horizon including a 14.2-metre interval that averaged 2.1% Zn and 0.14% Pb. Additional drilling is planned for Wasi Creek in 2006.

Geoinformatics Exploration Inc optioned the 118 000 hectare **Takla-Redton** property from Redton Resources Inc. The property is centered about 150 kilometres northwest of Fort St. James and covers Late Triassic to Early Cretaceous intrusions and volcanic rocks that are prospective for alkalic porphyry copper-gold deposits. Following compilation of all historical information to form a comprehensive GIS database for the property, the company completed a 4300 line-kilometre helicopter-borne magnetic and radiometric survey.

The profile of the **Lorraine-Jajay** alkalic porphyry copper-gold property (MINFILE 093N 002, 066, 224) received a boost in 2005 when Teck Cominco Ltd optioned the large tenure package from Eastfield Resources Ltd and Lysander Minerals Corporation. The property covers the headwaters of Ha Ha and Duckling creeks northwest of Germansen Landing. It is underlain by igneous rocks that are assigned primarily to the Late Cretaceous to Jurassic Hogem Intrusive Suite. The 2005 exploration program included bedrock mapping, sampling of talus fines, several IP surveys and diamond drilling near the Upper Main zone at Lorraine and on the Mackenzie, Rhonda and 2Good targets (Figure 3.8). The new 2Good target, located two kilometres west of the Lorraine zone, is defined by a magnetic low – IP chargeability high anomaly, but lacks a surface showing.

Figure 3.8. Diamond drill testing the Rhonda prospect, Lorraine-Jajay porphyry copper-gold property.

Figure 3.9. Project geologist Dr. Peter Fox in a 1940s trench on Cat Mountain, Osilinka property.

Highlight assays from the Upper Main zone drilling include a 30.08-metre intersection grading 1.19% Cu and 0.74 g/t Au in hole 05-105. This intersection effectively extends the Upper Main zone an estimated 250 metres westward. Drill assays from the Mackenzie zone, located 12 kilometres to the southeast of the main Lorraine area, encountered weakly altered and weakly mineralized rock. However at the Rhonda zone, 8.5 kilometres east of the main Lorraine area, drill hole 05-95 intersected 94.9 metres averaging 0.24% Cu. The Rhonda zone is characterized by areas of pervasive potassic alteration, disseminations and veins of chalcopyrite+/-magnetite and local calc-silicate and propylitic alteration of both intermediate volcanics and diorite.

To the north on Cat Mountain, Lysander Minerals Corporation explored its **Osilinka** (Minfile 094C 069) porphyry gold-copper property (Figure 3.9). The property straddles the contact between monzonitic intrusions of the Hogem Intrusive Suite and andesitic volcanics of the Takla Group. The primary targets of the eight-hole drill program were the Bet and Hoffman prospects. The Bet prospect is an 800-metre northerly trending structural corridor that displays impressive zones of magnetite, pyrite and chalcopyrite stockworking accompanied by K-feldspar flooding of the host volcanic rocks. To the east, the Hoffman prospect is defined by a coincident copper and gold soil geochemical anomaly. Results of the drilling were not available at the time of writing, however Lysander added on to the property by staking an additional 5000 hectares. The company also staked some 18 000 hectares of prospective ground adjacent to the regional Pinchi fault system.

The **QCM** bulk tonnage gold prospect (MINFILE 093N 024, 136 & 200), centred seven kilometres northwest of Manson Creek, was drilled by Canadian Gold Hunter Corp. A total of 9 holes evaluated carbonate-altered, quartz veined pyritic greywacke of the Triassic Slate Creek Succession (Takla Group) and returned a best intersection of 0.58 g/t Au over 137.2 metres.

Alpha Gold Corp released a revised resource figure for its **Lustdust** polymetallic property (MINFILE 093N 008 & 009) located 215 kilometres northwest of Fort St. James. Mineralization occurs in sedimentary and volcanic rocks of the Cache Creek Group and is genetically related to monzonite of the narrow, northwest–trending Eocene Glover stock. Five linear mineralized zones, including sulphide-rich proximal skarns (Canyon Creek and Canyon Creek extension), mantos (Zones 3 and 4B) and distal veins (Zone 1), have been extensively drilled. The zones comprise an inferred mineral resource of 2.45 million tonnes grading 2.45 g/t Au, 59 g/t Ag, 0.56% Cu and 1.01% Zn at a cut-off grade of 3 g/t Au equivalent. In 2005 Alpha completed a 16-hole, 5153-metre diamond drilling program. Drilling of a coincident gold-arsenic soil geochemical anomaly, 300 metres east of the Canyon Creek skarn zone, intersected narrow bands of manto-style mineralization (East zone).

Placer Dome Inc continued with its full pre-feasibility study on the **Mt. Milligan** porphyry gold-copper deposit (MINFILE 093N 191, 194) located west of Mackenzie. The Southern Star and MBX zones comprise the Mount Milligan deposit. The total measured and indicated mineral resource for the property is 408.45 million tonnes grading 0.4 g/t Au and 0.184% Cu. The results of the company's evaluation may be available in the spring of 2006.

The **Fran** porphyry gold-copper property (MINFILE 093N 207), located 70 kilometres north of Fort St. James, was explored by Yankee Hat Industries Corp. The property is underlain by an Early Jurassic granodiorite to quartz diorite stock and hornfelsed volcaniclastics and cherty argillites of the Inzana Lake succession (Takla Group). Numerous narrow pyrite-pyrrhotite-chalcopyrite veins and wider structural zones hosting disseminated sulphide mineralization are concentrated along the contact between the intrusion and hornfelsed country rock (Figure 3.10). Diamond drilling and trenching of the North Contact and South Contact zones, part of a 1.5 kilometre long prospective belt, produced a number of multi-gram gold assays. Highlights include a 1.55-metre intersection

in hole FR-047 that graded 19.52 g/t Au, 31.5 g/t Ag and 0.98% Cu and an 11-metre channel sample from Trench B that averaged 8.42 g/t Au, 20.5 g/t Ag and 3664 ppm Cu.

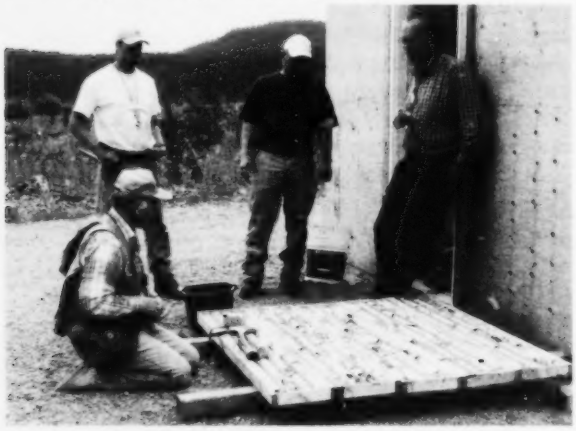

Figure 3.10. Project geologist Ron Wells explaining the geology of Fran property.

Amarc Resources Ltd completed a number of large induced Polarization surveys over prospective areas of its massive **Chica** and **Chona** properties in the Nation River area east of Chuchi Lake. The company's tenure covers vast areas of the Quesnel Terrane that are prospective for bulk tonnage copper-gold deposits. The company drilled several priority targets, including the MW (Milligan West) geochemical-geophysical anomaly, late in the year, but has not released any results.

Several modest exploration programs also took place in the Chuchi Lake area including those on the **Cabin Lake** and **Skook** properties of Nation River Resources Ltd and on the **Chuchi Lake** property of High Ridge Resources Ltd.

West Hawk Development Corp acquired 12 000 hectares of tenure covering part of the **Groundhog** coal field (MINFILE 093N 212) in the northwest corner of the Fort St. James Forest District. The company assessed existing data and reported a NI43-101 compliant inferred resource of 48.2 million tonnes of anthracite for the Discovery Creek and Evans Creek blocks.

***Northern Rocky Mountains***

Wealth Minerals Ltd acquired the **Mackenzie** property, located north of Mackenzie in the Misinchinka Ranges east of Williston Lake, and completed a large reconnaissance geochemical sampling program in search of sediment-hosted vein deposits. The property covers a 65-kilometre northwest trending belt of primarily Late Proterozoic clastic and carbonate rocks of the Misinchinka Group. The work identified numerous gold anomalies in stream sediments up to 1250 ppb Au, abundant quartz float and local areas of carbonate alteration.

Midway through the year Mantle Resources Inc optioned the **Akie** property (MINFILE 094F 031) from Ecstall Mining Corp. Akie is located in the Gataga area north of Williston Lake. The property hosts a sheet-like body of sedimentary-exhalative zinc-lead-silver mineralization within shale of the middle to late Devonian Gunsteel Formation. The mineralized zone strikes northwest for 1600 metres, extends down dip for 800 metres and is up to 30 metres thick. Mineralization consists of finely laminated sphalerite, galena and pyrite within a thicker zone of laminated pyrite and barite with shale interbeds. Previous work by Inmet Mining Corporation outlined an inferred resource of 12 million tonnes grading 8.6% Zn, 1.5% Pb and 17.1 g/t Ag based on four drill holes. Mantle's first (A-05-30) of four bore holes drilled in the core of the resource area, intersected 17.9 metres grading 17.2% Zn, 4.2% Pb & 30.1 g/t Ag within a 37-metre interval that averaged 11.0% Zn, 2.6% Pb and 21.1 g/t Ag. Mantle is planning an expanded drill program for the 2006 field season.

***Prince George - McBride***

North of McBride, Canadian Empire Exploration Corp acquired the **McBride** property. It is a 75 kilometre northwest-trending belt of tenure covering fine to coarse-grained sedimentary rocks of upper Proterozoic age that is prospective for sedimentary-exhalative nickel-copper-zinc mineralization. Previous prospecting and geochemical sampling identified a 50 kilometre trend of elevated nickel, copper and zinc values and more than 25 gossans.

Tiger Ridge Resources acquired the **Apollo** (MINFILE 093H 136) bedded barite prospect located near the Bowron River east of Prince George, from Ron MacArthur and drilled six bore holes into the barite-rich horizon.

In the Robson Valley east of Prince George, Yellowhead Mining Corporation investigated several properties, including **East Twin**, **Forget** and **Ramcorp**, for sources of dimension stone and landscaping material.

Dave Pilkington mined and marketed a small tonnage of green slate from his **Dyno** property near Herrick Creek east of Prince George.

***Nechako Plateau***

Leeward Capital Corp completed two phases of diamond drilling on the **Nithi Mountain** porphyry molybdenum prospect (MINFILE 093F 006-016) located 10 kilometres south of the town of Fraser Lake and just 18 kilometres east of the operating Endako molybdenum mine. Molybdenite occurs as fracture fillings and narrow, ribboned quartz-molybdenite veins in argillically and potassically altered coarse-grained quartz monzonite of the Nithi Mountain phase of the Late Jurassic to Early Cretaceous Francois Lake Plutonic Suite (Figure 3.11). Drilling evaluated three zones (Beta, Delta and Gamma) within a 4 kilometre by 1 kilometre east-northeast trending corridor of mineral showings and geochemical

and geophysical anomalies called the Alpha Trend. The Gamma zone produced the best assays from the first phase of drilling and included a 256 metre intersection in hole N-05-01 that averaged 0.057% MoS2. The second phase of drilling focussed on the Gamma zone, but assays were not available at the time of writing. The company's goal is to outline a 100 million tonne deposit with an average grade of 0.1 % MoS2.

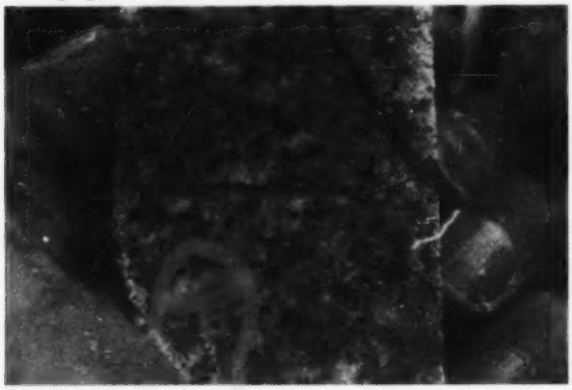

Figure 3.11. Fracture-controlled molybdenite in coarse-grained quartz monzonite, Nithi Mountain property.

Almo Capital Corp evaluated its **DD** property in the McDougall River area on the northern edge of the Nechako Plateau. Diamond drilling intersected sulphide-bearing pyroxenite and hornblende pyroxenite that intrude and hornfels sedimentary rocks of the Triassic Takla Group. Elevated, but sub-economic grades of copper, nickel, gold and platinum group elements were reported.

Diamond drilling by Southern Rio Resources Ltd (now Silver Quest Resources Ltd) on its **Davidson** epithermal gold-silver prospect (MINFILE 093F 037) in the Nechako Plateau area south of Vanderhoof resulted in a discovery of a new gold zone in a previously untested area. Strongly altered felsic to intermediate volcanics of the Early Jurassic Hazelton Group underlie the area of interest and are coincident with geophysical and geochemical anomalies. Drill-hole DAV-05-02 intersected 14.0 metres grading 4.94 g/t Au and 17.1 g/t Ag within a 64.0-metre interval averaging 1.80 g/t Au and 6.5 g/t Ag.

Exploration further south on Southern Rio's **3Ts** epithermal gold-silver property (MINFILE 093F 055, 068) included detailed lake sediment sampling and diamond drilling. In November, 2004, the company initiated a 4000-metre diamond drilling program which continued well into 2005. Deep holes intersected the depth extension of the Ted vein and Tommy vein. The highlight of the program was hole TS-05-108, drilled to test the central portion of the Tommy quartz-carbonate vein system below a 100 metre thick microdiorite sill. Drill-hole TS-05-108 intersected 8.9 metres grading 10.9 g/t Au and 60.2 g/t Ag including a 2.6 metre interval grading 23.1 g/t Au and 153.2 g/t Ag. The intersection demonstrated that the vein system remains open at depth particularly along strike to the north.

Endurance Gold Corporation evaluated its **Nechako Gold** epithermal gold-silver prospect (MINFILE 093B 054) in the southern Nechako Plateau area 75 kilometres west of Quesnel. Three bore holes of a planned six-hole program were drilled to test strong IP chargeability anomalies in the southwest corner of the property. They intersected a sedimentary succession that included graphitic argillites, a likely explanation for the chargeability anomalies. Drilling of the primary target, a zone of low grade gold mineralization (64 metres averaging 611 ppb Au) previously defined by Lac Minerals Ltd, was deferred until 2006.

### *Cariboo*

The largest exploration program in the Cariboo was conducted by Imperial Metals Corporation on and adjacent to its **Mount Polley** mining lease west of Likely. By mid-year close to 40 000 metres of diamond drilling had been completed. It further appraised the Northeast and Southeast zones and tested the Pond showing.

The 2003 discovery of the **Northeast** zone, a high-grade 'end member' of the alkalic porphyry copper-gold system at Mount Polley, is now in production as the Wight pit. Northeast zone mineralization consists of fracture-controlled and coarsely disseminated bornite and chalcopyrite in potassically-altered homolithic to polylithic hydrothermal breccias associated with monzonite and plagioclase porphyry intrusive phases. Drilling at the Northeast zone evaluated a possible northwest extension, called the **92** zone, and tested for the continuity of deep, high-grade copper-gold-silver mineralization, called the **Green** zone. The Green zone occupies a position below the present mine plan for the Wight pit. Earlier drilling intersected the Green zone over a strike length of 270 metres and yielded some impressive mineralization including a 25.1 metre interval that averaged 4.43% Cu, 1.28 g/t Au and 26.9 g/t Ag.

Systematic drilling of the **Southeast** zone outlined a small near surface deposit with a low strip ratio that will ultimately find its way to the mill Atypically, the zone occurs outbound from the intrusion and is hosted by propylitically altered intermediate volcanic breccias. A measured and indicated resource for the Southeast zone, calculated in February prior to completion of drilling, totalled 3.53 million tonnes grading 0.377 g/t Au and 0.215% Cu. The nearby **Pond** showing had not previously been drilled. It was tested with four diamond drill holes that intersected a well-mineralized calc-silicate (skarn) assemblage including a 51.3 metre interval in hole PZ05-01 that averaged 0.88% Cu, 0.66 g/t Au and 11.6 ppm Ag.

Following the completion of diamond drilling, Imperial Metals embarked on a large till geochemical sampling, bedrock mapping and data compilation program. This work identified numerous targets worthy of follow-up. In the fall the company Imperial Metals assessed a number of targets using a percussion drill rig.

Approximately 150 shallow holes were drilled along or near existing roads and identified several new areas of mineralization, including the promising Tall Fir, Ace, Skid and Wagon Wheel zones. Concentrated drilling of the **Wagon Wheel** zone, a magnetite-bearing breccia within 300 metres of the mill, outlined an Indicated Resource of 0.4 million tonnes grading 0.46% Cu and 0.60 g/t Au. The company plans to resume its exploration drilling program early in the new year.

Just north of the Quesnel River, Cross Lake Minerals Ltd completed a feasibility study on its dormant **QR** gold mine. Mineralization occurs in propylitically altered basalt and lesser hornfelsed siltstone peripheral to a Late Triassic-Early Jurassic diorite stock. Two of three zones (the West and Midwest zones) containing resources at QR were partly mined by Kinross Gold Corp between 1995 and 1998. Updated "Combined Measured and Indicated Resources" for the three zones area:

Midwest zone: 180 712 tonnes grading 5.54 g/t Au.
West zone: 355 907 tonnes grading 5.07 g/t Au
Northwest zone: 122 417 tonnes grading 3.58 g/t Au

In 2005, the company rehabilitated the underground Midwest zone as part of its re-evaluation of the property. It also conducted a limited infill drilling program on the West zone, drilled two holes to further test the promising North zone and drilled another two holes to evaluate an IP chargeability anomaly. Cross Lake Minerals is poised to reopen the mine should its studies determine that it is economically feasible.

Richfield Resources Ltd conducted a helicopter-borne magnetic and radiometric survey on its **Cinema-Mouse Mountain** property east of Highway 97 and north of Quesnel. Only a modest amount of follow-up work was performed including a small trenching program on the Chubby Bear prospect.

Reverse circulation and core drilling by partners Wildrose Resources Ltd and Skygold Ventures Ltd continued to evaluate the bulk tonnage gold potential of their **Spanish Mountain** mesothermal gold property (MINFILE 093A 043) east of Likely. Phyllitic black shales and dark grey siltstones of the basal Nicola Group (Takla equivalent) are host to pyrite and quartz-pyrite veins, stringers and stockworks that locally report bonanza-grade gold values. The main zone is highlighted by a northwest trending three kilometre by one kilometre gold geochemical anomaly. Drilling within this area has outlined a gently dipping horizon over a strike length in excess of 1500 metres. Step out drilling continued to test the zone along strike and expand the 250 metre width of the zone which remains open (Figure 3.12). Late in the year, deeper drilling intersected a second horizon of preferentially gold-enriched shale and siltstone beneath the 'upper' horizon. Drill hole 05-DDH-270 intersected both mineralized blankets--the 'upper' horizon averaged 1.05 g/t Au over 78.2 metres and the 'lower' horizon' averaged 1.01 g/t Au over 88.44 metres. The increased density of drilling may support the calculation of the resource estimate. The companies' aggressive exploration drilling campaign is expected to continue in 2006.

Figure 3.12. Examining fresh drill core at the Spanish Mountain gold prospect.

Dajin Resources Corp optioned the **Addie 1** and **Addie 2** properties from Lloyd Addie and completed modest prospecting and geochemical sampling programs. Addie 1 adjoins the Spanish Mountain property and Addie 2 is adjacent to Eureka Resources' **Frasergold** prospect (MINFILE 093A 150). Both properties are prospective for bulk tonnage and bonanza-grade gold mineralization.

Noble Metal Group Inc drilled 3 holes in search of mesothermal gold mineralization on its **Noble** property in the headwaters of Keithley Creek. The company also completed a small test mining program (< 1000 cubic metres) on its nearby placer lease that produced 966 grams of gold.

Late in the year Barker Minerals Ltd initiated a 1000 to 1500 metre diamond drilling program on its **Frank Creek** volcanogenic massive sulphide property (MINFILE 093A 152) south of Cariboo Lake.

Fjordland Exploration Inc drilled the Megabuck and Takom zones on the **Woodjam** property (MINFILE 093A 078) south of Horsefly. Gold-copper mineralization at Woodjam is associated with a subvolcanic quartz monzonite intrusion, part of the Late Triassic to Early Jurassic Takomkane batholith, in proximity to intermediate flows of the Nicola Group. Four of five holes drilled on the east side of the Megabuck zone intersected the projected eastern extension of the zone. Encouraging intervals of gold-copper mineralization include 91.7 metres averaging 1.00 g/t Au and 0.22% Cu within a 178.9–metre intersection averaging 0.64 g/t Au and 0.13% Cu in drill hole 05-43. A summer reverse circulation drilling program on the Takom zone, defined by a coincident copper geochemical and IP anomaly, encountered anomalous copper grades. A single diamond drill hole completed on the zone in the fall intersected 82.6 metres grading 0.06 g/t Au and 0.11% Cu. Fjordland is expected to conduct an expanded drill program on the property in 2006.

To the north, Wind River Resources Ltd completed five diamond drill holes on the **Rand** porphyry copper-gold prospect. Drilling did not intersect any intervals of economic significance. There were also a number of smaller exploration programs in the Likely to Horsefly area of the southern Quesnel Terrane. These included the **Miracle** project of Consolidated Big Valley Resources Inc, the **TJ** project of Tom Scuffi, the **Cedar Creek** project of Gordon Richmond, the **Giff** and **Naud** projects of Amarc Resources Ltd and the **Horsefly** project of Chapleau Resources Ltd.

Copper Ridge Resources completed an IP program on the **Copper Ace South** and **Copper King** properties immediately north of the Gibraltar mine.

Exploration continued on a number of properties in the Wells-Barkerville gold belt, an area underlain by argillites, psammites and limestones of the Paleozoic Snowshoe Group. International Wayside Gold Mines Ltd drilled along the Bonanza Ledge and Wells trends near the **Bonanza Ledge** gold deposit on its **Cariboo Gold Quartz** property. Drilling targeted both mesothermal vein and replacement-style mineralization that are known to host moderate to high gold grades. Late in the year the company announced its desire to mine the Bonanza Ledge deposit by open pit methods. The deposit was previously defined by a systematic diamond drilling program and mining of a 10 000 tonne underground bulk sample.

To the north on tenure enclosing the former **Mosquito Creek Gold** mine (093H 010), Island Mountain Gold Mines Ltd explored for similar style mineralization in impure limestones. No results from the program have been released. In December the company announced its plan to sell all of its tenure in the Wells-Barkerville area to sister company International Wayside Gold Mines.

Williams Creek Exploration Limited returned to its **Westport** mesothermal gold vein prospect in the Wells area after a one-year hiatus and drilled six holes. Several encouraging intersections resulted from program including a 38.6 metre interval in drill hole 05-01 that averaged 2.6 g/t Au. The intersection was heavily influenced by a 0.68-metre quartz vein that assayed 86.8 g/t Au.

South of Barkerville, Golden Cariboo Resources Ltd evaluated a number of mesothermal vein and replacement-style gold targets on its stable of properties in the Grouse Creek and Cunningham Creek areas. Drilling took place on the **G**, **Grouse**, **Warspite**, **Tin**, **Nugget**, **Cariboo Hudson**, **Craze**, **Wolf** and **Bar** prospects.

## ACKNOWLEDGEMENTS

The author acknowledges the contributions provided by mine staff and exploration geologists working in the region. The manuscript benefited from constructive suggestions from Victor Koyanagi.

# SOUTH-CENTRAL REGION

**By Mike Cathro, PGeo**
Regional Director, Kamloops

## SUMMARY AND TRENDS

For the sixth straight year, exploration activity increased in South-Central BC. Spending on exploration is estimated at about $35 million, up sharply from the $21 million spent in 2004 (Figure 4.1). The spending levels were helped by the very large underground work program at the **New Afton** project, which accounted for about half the total. Drilling activity was even at about 110 000 metres (Figure 4.2). The number of major projects, *i.e.*, those with drilling or trenching and over $100 000 in spending, is estimated at 33, compared with 29 in 2004 (Figures 4.3 and 4.4, Table 4.2).

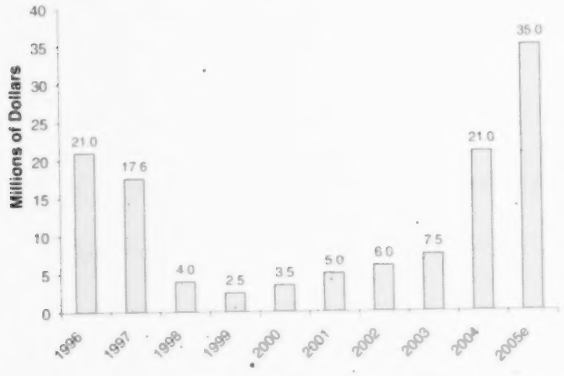


Figure 4.1. Annual exploration spending, in millions of dollars, South-Central region.

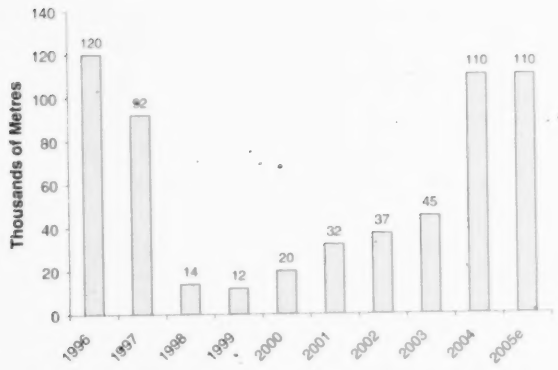


Figure 4.2. Annual exploration and development drilling, in thousands of metres, South-Central region.

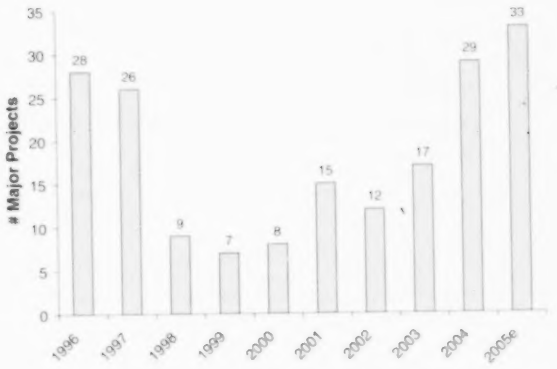


Figure 4.3. Number of major exploration projects per year, South-Central region.

In terms of mining activity, the highlight for the year was the announcement of the five-year mine-life extension of **Highland Valley Copper**, to 2013. This will include a push-back of the **Valley** pit and re-opening of the **Highmont** east pit. Several of the projects are undergoing advanced exploration, environmental review, permitting or feasibility studies and could enter production in the future. The most advanced are **New Afton**, **Elk** and **Prosperity**.

Exploration activity continues to be led by junior companies, which were responsible for over 90% of the investment. These companies are primarily targeting bulk-mineable copper-gold and copper-molybdenum porphyry deposits, high-grade gold-silver veins, and stratiform polymetallic massive sulphide deposits. A resurgence of interest in molybdenum porphyry deposits is noted.

Several promising discoveries or significant extensions of known deposits were made during the year, including **Skoonka Creek** (gold-silver), **Ruddock Creek** extension and Oliver Creek zone (zinc-lead-silver), **Fox** Nightcrawler-Creek zone (tungsten), **Crazy Fox** (molybdenum), **Jake** (gold) and **LJ** (zinc-lead-silver).

All of the operating mines in the region are listed in Table 4.1 and shown on the map (Figure 4.4). In addition, the major exploration projects are listed in Table 4.2.

## TABLE 4.1. SOUTH-CENTRAL REGION MINE PRODUCTION 2005

| | Mine | Operator | Deposit Type / Commodity | Forecast Production in 2005 (tonnes or kilograms) | Number of Employees | Proven and Probable Reserves (on Jan. 1, 2005) |
|---|---|---|---|---|---|---|
| **Metals** | | | | | | |
| | Highland Valley Copper | Teck Cominco Ltd / Highmont Mining Company Ltd | Calc-alkalic porphyry Cu-Mo | 172 000 t Cu, 3000 t Mo, 500 kg Au, 70 000 kg Ag | ~900 | 166 500 000 t at 0.43% Cu (Note: prior to Sept. 2005 revision of mine plan) |
| **Coal** | | | | | | |
| | Basin | Compliance Energy Corp | Thermal coal | 75 000 | ~20 | |
| **Industrial Minerals** | | | | | | |
| | Ashcroft | IG Machine and Fiber Ltd (IKO Industries Ltd) | Basalt (roofing granules) | | 55 (plant & quarry) | |
| | Bud | Western Industrial Clay Products Ltd | Bentonite | | see Red Lake | |
| | Buse Lake | Lafarge Canada Inc | Volcanic ash (alumina-silica) | | see Harper Ranch | |
| | Craigmont | Craigmont Mines Joint Venture | Magnetite tailings | | ~30 (plant; seasonal) | |
| | Decor | Pacific Bentonite Ltd | Alumina, landscape rock | | ~4 (including trucking) | |
| | Falkland | Lafarge Canada Inc | Gypsum | | see Harper Ranch | |
| | Harper Ranch | Lafarge Canada Inc | Limestone | | 32 (plant & 3 quarries) | |
| | Kettle Valley quarries | Kettle Valley Stone Company | Ashlar, flagstone, thin veneer | | ~40 (plant & quarries) | |
| | Pavilion | Graymont Western Canada Inc | Limestone | | ~34 (plant & quarry) | |
| | Red Lake | Western Industrial Clay Products Ltd | Diatomaceous earth, leonardite | | 40 (plant & 3 quarries) | |
| | Z-2 | Industrial Minerals Processors | Zeolite | | ~3 (plant and quarry; | |

## TABLE 4.2. MAJOR EXPLORATION PROJECTS, SOUTH-CENTRAL REGION, 2005

| Property | Operator | MINFILE (or NTS) | Commodities | Target Type | Work Program |
|---|---|---|---|---|---|
| Ajax (Abacus) | Abacus Mining and Exploration Corp / Teck Cominco Ltd | 92INE012, 013 | Cu, Au | Alkalic Porphyry | DD (~3000 m) |
| Basin (Tulameen) Coal | Compliance Energy Corp | 092HSE 094, 157 | Thermal Coal | Sedimentary | DD (~1320 m) |
| Bralorne (Cosmopolitan, Peter Vein; 51B Vein) | Bralorne Gold Mines Ltd | 92JNE164, 001 | Au, Ag | Mesothermal Vein | DD (~5000 m); UG (~1070 m); UG-BS (~3200 t); test milling (~21 000 t) |
| Broken Hill | Timer Explorations Inc | 82M 279, 280, 281 | Zn, Pb, Ag | Stratiform | DD |
| Congress | Levon Resources Ltd | 92JNE029, 131, 132, 133 | Au, Ag, Cu, Sb | Mesothermal Vein | DD (1061 m); TR; MS; GC |
| Craigmont | Christopher James Gold Corp | 92ISE035 | Cu | Skarn | GP; DD (~3000 m) |
| Dusty Mac | Ecstall Mining Corp | 82ESW078 | Au, Ag | Epithermal Vein | GP; DD (1400 m) |
| Elizabeth | J-Pacific Gold Inc | 92O 012 | Au, Ag, Cu, Mo | Mesothermal Vein | DD (~2800 m) |
| Elk (Siwash North) | Almaden Minerals Ltd | 92HNE096 | Au, Ag | Mesothermal Vein | DD (8395 m) |
| Extra High (Kamad 7) | Bronx Ventures Inc | 82M 277 | Au, Ag, Cu, Pb, Zn | Kuroko-type VMS | TR; DD (~1700 m) |
| Getty North | Getty Copper Inc | 92INE038 | Cu | Calc-alkalic porphyry | G, MS |
| Highmont East | Highland Valley Copper | 92ISE013 | Cu, Mo | Porphyry | DD; FS; ES; BK |
| Iron Lake | Argent Resources Ltd / Eastfield Resources Ltd | 92P 132 | Cu, Au, Pd, Pt | Alkalic Porphyry | GP; DD (505 m) |
| Isintok Lake | Jasper Mining Corp | 82ENW093 | Ag, Cu, Mo | Porphyry | AB-GP; DD |
| Ketchan | Copper Belt Resources Ltd | 92HNE126, 037, 131, 115, 118, 163, 140 | Cu, Au, Ag | Alkalic Porphyry | DD (1210 m); G; GP |
| Kneb | Selkirk Metals Corp | 82M/10E | Zn, Pb, Ag | Stratabound | G, DD (397 m) |
| Lac La Hache (Ann North, Spout, Peach etc) | GWR Resources Inc | 92P 002, 115, 034 | Cu, Au, Ag, magnetite | Alkalic Porphyry | AB-GP; DD (1788.4 m) |
| LJ | Selkirk Metals Corp | 82M 264 | Zn, Pb, Cu, Au, Ag | Besshi VMS | D (769.79 m) |
| Max (Kamad) | Amarc Resources Ltd | 82M025 | Au, Ag, Zn, Pb, Cu | Kuroko-type VMS | G; DD (3718 m) |
| New Afton | New Gold Inc | 92INE023 | Cu, Au, Pd, Ag | Alkalic Porphyry | UG; FS; DD (~20 000 m); AB GP |
| Newmac | Newmac Resources Inc | 92N 030, 054, 055 | Cu, Ag, Au | Porphyry, vein | DD (~1000 m) |
| Panorama Ridge | Goldcliff Resource Corp | 82ESW052, 259 | Au | Skarn | DD (~1200 m); TR |

## TABLE 4.2. CONTINUED

| Property | Operator | MINFILE (or NTS) | Commodities | Target Type | Work Program |
|---|---|---|---|---|---|
| Prospect Valley (PV, NIC) | Cons. Spire Ventures Ltd / Almaden Minerals Ltd | none | Au, Ag | Epithermal Vein | GC; P; TR |
| Rabbit South and North | Global Hunter Corp | 92INE071, 147, 130, 114 | Mo, Cu, Au | Porphyry | DD (2390 m) |
| Rain (Sorcerer) | Orphan Boy Resources Inc | 82M 156 | Cu, Zn, Pb, Au, Ag, Mo, W | VMS; Skarn; Porphyry; Vein | DD |
| Rateria | Happy Creek Minerals Ltd | 92ISE092, 150, 060 | Cu, Mo | Calc-alkalic porphyry | DD (341 m) |
| Red Hill | Avalon Ventures Ltd | 92INW042 | Cu, Zn, Au, Ag | VMS | DD (1279 m); G; GP |
| Ruddock Creek | Selkirk Metals Corp / Doublestar Resources Ltd | 82M 082, 83 | Zn, Pb, Ag | Stratiform | D (3245 m); AB-EM; GP; GC |
| Skoonka (Sam) | Strongbow Exploration Inc / Almaden Minerals Ltd | 92ISW104 | Au, Ag | Epithermal Vein | DD (1257 m) |
| Tadpole | Goldrea Resource Corp / Molycor Gold Corp | 82LSW009 | Mo | Porphyry | DD (1146 m) |
| Upper Fir & Bone Cr. | Commerce Resources Corp | 83D 035, 036 | Ta, Nb, U, Phosphate | Carbonatite | DD |
| WCL | Western Canada Limestone Ltd | 82LSW112 | Limestone | Industrial Mineral | MS; FS |
| Whipsaw | Canfleur Mining Inc | 92HSE102 | Cu, Mo, Au, Ag | Porphyry | DD |

A = access; trail, road construction on claims; AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; AB-RD = airborne radiometrics; BU (X tonnes) = bulk sample (weight in tonnes if known); CD = condemnation drilling; CQ = coal quality testing; CT = carbonization test (coal); DD (Xm) = diamond drilling totaling X metres; EN = environmental baseline studies/monitoring, remediation work; FS = feasibility studies; G = geology, mapping, etc; GC = geochemical sampling (rock, soil, silt, etc); GD = geotech drilling; GP = geophysics (general); IP = Induced Polarization; 3D-IP; MG = magnetics; MK = marketing-primarily for industrial mineral products; MS = metallurgical studies; OB = overburden drilling; P = prospecting; PD = percussion drilling; PF = pre-feasibility studies; R = reclamation; RC = reverse circulation drilling; TR = trenching, UG (X m) = X metres of underground development; UG-BU = underground bulk sample; OP-BU = open-pit bulk sample; UT = UTEM; VLF; WT = washability test (coal)

Figure 4.4. Mines, quarries and major exploration projects, South-Central region, 2005.

## MINES AND QUARRIES

### METALS

**Highland Valley Copper** (HVC; Figure 4.5), a partnership of Teck Cominco Ltd (97.5%) and Highmont Mining Company Ltd (2.5%), benefited from exceptional copper and molybdenum prices in 2005. Employing about 900 people, the operation is forecast to produce close to$1 billion in revenue and $600 million in operating profit for 2005. Average daily mill throughput has averaged about 136 000 tonnes per day (or 50 million tonnes per year) in recent years.

Figure 4.5. Stripping overburden at Valley pit, Highland Valley Copper.

In September, HVC announced an important decision to extend the mine life by five years to 2013. The extension plan involves relocation of two in-pit crushers, purchase of $40 million of additional equipment, push-back of the Valley pit east wall and about $150 million in stripping to be completed by 2009. Very late in the year, Teck Cominco announced it is also considering building a modern hydrometallurgical refinery on site.

Copper production at HVC in 2005 is forecast to be about 172 000 tonnes, slightly higher than 2004 due to marginally higher grades and throughput. Molybdenum production will be about 3000 tonnes which is in line with the 5-year average, but down by about 40% from 2004, which was an unusual and exceptional year. The mine also produces minor by-product gold and silver.

Most ore comes from the **Valley** pit, augmented by a small amount from the **Lornex** pit. Following a successful 300 000 tonne bulk sample test, the **Highmont East** pit, closed since the mid-1980s, was re-opened in fall 2005 to take advantage of higher molybdenum prices. In addition, exploration drilling was conducted nearby in the **Highmont South** area and results are being evaluated.

Several other mine-mill complexes remain on care-and-maintenance status. Many of these have been closed since the mid-1990s, awaiting higher metal prices and/or discovery of additional ore. They have permits and substantial infrastructure in place and represent excellent opportunities for renewed mining or custom milling. Orphan Boy Resources Inc owns the **Goldstream** copper-zinc mine-mill complex north of Revelstoke. In 2005 the Goldstream permit was amended to allow custom milling at the 1360 tonne-per-day Goldstream mill. Only minor exploration was conducted at the nearby **Rain** property in 2005 (see below).

The dormant **Blackdome** gold-silver mine and mill of J-Pacific Gold Inc located northwest of Clinton also remains on care and maintenance. This underground mine operated in the 1980s and again briefly from October 1998 to May 1999. Mineralization consists of narrow, high-grade epithermal quartz veins. The 200 tonne-per-day mill is intact and the property has an inferred mineral resource of 124 120 tonnes grading 12.8 g/t gold and 33.7 g/t silver. In recent years, J-Pacific has focused its attention on the **Elizabeth** property located 32 kilometres to the south (see below).

The **Similco** (Copper Mountain-Ingerbelle) copper-gold mine at Princeton also remains on care and maintenance. When it shut down in 1996, the Similco mine was reported to have a resource of 142 million tonnes grading 0.397% copper (plus unreported gold) in the area of Pits 2 and 3 on the Copper Mountain side of the property. The property was sold in 2002 to Envirogreen Technologies Ltd, a company involved in the remediation of special wastes, which has set up a plant on a small portion the mine site.

### COAL

Located near the town of Coalmont, the small **Basin** thermal coal mine expanded production to about 75 000 tonnes in 2005. The high volatile, bituminous B and C rank coal is sold mainly to cement plants and small greenhouse growers in southern BC. Compliance Energy Corp consolidated ownership of the property and improved the efficiency of the operation by moving the wash plant to the mine site (Figure 4.6). It was formerly at the Similco mine site, which will continue to serve as a load-out for highway trucks. In addition, a fleet of mining equipment was purchased, and a barge load-out facility was set up on the Cheam Indian Reserve on the Fraser River. The company is currently studying the feasibility of establishing a 49-megawatt coal and wood-fired generating station on the Similco site.

Figure 4.6. Coal wash plant at Basin mine of Compliance Energy Corp.

## INDUSTRIAL MINERALS

There are more than fifteen industrial mineral quarries and processing plants employing over 250 people in the region. These operations provide stable jobs in many small to medium-sized communities including Kamloops, Kelowna, Lillooet, Cache Creek, Ashcroft, Princeton and Merritt. There are very good opportunities for additional growth in this sector due to the wide variety of rock types and deposits in the region, excellent transportation infrastructure, proximity to growing markets in western North America, and the relative ease of permitting.

A new limestone quarry received a permit for production in 2005. The **WCL** quarry of Western Canada Limestone Ltd is located in the Bear Creek area, west of Kelowna (Figure 4.7). The company is targeting agricultural, chemical and industrial markets.

Figure 4.7. WCL limestone quarry of Western Canada Limestone Ltd.

The **Kamloops** cement plant and **Harper Ranch** limestone quarry of Lafarge Canada Inc operated near capacity in 2005 due to strong demand in western Canada. The plant can produce about 220 000 tonnes of cement per year. Lafarge also draws materials from the **Falkland** and **Buse Lake** quarries, which provide gypsum and alumina-silica rock respectively. There are roughly 32 permanent staff and contractors working in the plant and quarries.

The **Decor** pit of Pacific Bentonite Ltd supplies alumina-rich burnt shale to the Lafarge cement plant in Kamloops. Production at this recently permitted quarry increased significantly to about 27 000 tonnes in 2005 (Figure 4.8). The shale beds occur directly above the Hat Creek coal deposit, located west of Cache Creek. Although most of the material is sold to Lafarge, a few thousand tonnes were also sold for surfacing of baseball diamonds. The property is also known to host a large bentonite deposit which is being investigated for municipal engineering and tile manufacture applications.

Figure 4.8. Decor alumina shale pit of Pacific Bentonite Ltd.

Also near Cache Creek, Graymont Western Canada Inc operates the **Pavilion** limestone quarry and lime plant on the Pavilion Indian Reserve. Employing about 34 people, mainly First Nations, the operation produces lime used in pulp mills, mines and other industrial processes. The plant has rated capacity of 180 000 tonnes of lime per year, but recently has been producing about 100 000 tonnes per annum. Graymont recently signed a forty-year lease extension and is studying the feasibility of a change in the mining system.

East of Ashcroft, IG Machine and Fiber Ltd, a subsidiary of IKO Industries Ltd, operates the **Ashcroft** basalt quarry and roofing granule plant. The plant employs about 55 people and produces about 250 000 tonnes of roofing granules per year. The granules are sized and coated with one of several distinct colours on site, and then shipped by rail and truck to IKO asphalt shingle plants in Calgary, Alberta; Sumas, Washington; Chicago, Illinois and elsewhere in North America (Figure 4.9).

To the east, the **McAbee** and **Walhachin** quarries supply basalt for railroad ballast for the Canadian National and Canadian Pacific railways, respectively. The railroads also have several other quarries in the region.

Figure 4.9. Truck arriving to pick up roofing granules at Ashcroft plant of IG Machine and Fiber Ltd.

Craigmont Mines Ltd operates the **Craigmont** magnetite tailings operation located near Merritt, which employs about 30 people. Tailings from the old Craigmont copper mine are processed to recover about 70 000 tonnes of magnetite annually. The plant normally operates on a seasonal basis (March to December), however, due to strong demand, processing is expected to continue through the 2005-2006 winter. The magnetite is used in coal washing plants in western Canada and the Centralia mine in Washington State. Remaining tailings are forecast to be exhausted in about four years, and the company is evaluating several other possible feed sources.

At its plant in Kamloops, Western Industrial Clay Products Ltd manufactures cat litter, barn deodorizer, industrial absorbents, and carriers for agricultural products. These are prepared from diatomaceous earth mined from the **Red Lake** quarry northwest of Kamloops, and bentonite mined from the **Bud** quarry at Princeton. About 40 to 45 people are employed at the company's various sites.

The **Z1** (Ranchlands) zeolite quarry near Cache Creek is a small intermittent producer. Ownership changed hands in mid-year when the Western Canadian Mineral Products Division of Dynatec Corporation was sold to Heemskirk Consolidated Ltd of Australia. The Division continues to market agricultural and absorbent products, produced from stockpiled zeolite at its plant in Lethbridge, Alberta.

Zeolite was mined from the nearby **Z2** quarry for processing at a plant in Ashcroft. The quarry and plant are owned by Industrial Mineral Processors, a private company based in Calgary. The plant produces industrial absorbents for oil field clean-up, soil conditioner, barn deodorizers, feed binders, and cat litter.

At Princeton, Zeo-Tech Enviro Corp owns the **Zeo** (Bromley Vale) zeolite quarry. The company mined and crushed 10 000 tonnes in 2005. Zeo-Tech is part owner of United Zeolite Products Ltd which built a zeolite micronizing plant in 2004. United has a five-year, five million-dollar contract with Hallibuton Energy Services Inc to supply zeolite used to produce lightweight cement for oil and gas wells. Also in 2005, Zeo-Tech acquired the nearby **Sun** zeolite property.

Okanagan Opal Inc produces attractive fire opal gemstones and jewelry from the **Klinker** property, located west of Vernon. Opal occurs as fracture and vesicle-fillings in andesitic to basaltic laharic breccia of the basal Kamloops Group (Eocene). Presently the gemstone jewelry is marketed from a retail store in Vernon and is aimed at the BC tourist market; however, the company aims to develop other North American markets.

Decorative rock and dimension stone are produced at numerous small quarries throughout the region. The best known producer is the Kettle Valley Stone Company of Kelowna which sells flagstone, ashlar, facing stone and landscape rock mined from the **Nipple Mountain**, **Kettle Valley**, **Canyon** and **Gemini** quarries. Kettle Valley's workforce has grown to about 40 people year round, mainly employed in the Kelowna processing facility. The products include dacite ash, gneiss and basalt, and are mainly used in high-end residential and commercial developments in the western U.S.A. and in the Vancouver-Whistler area.

South of Revelstoke, D.G. Olsson produces, by hand, small amounts of micaceous-quartzite flagstone and facing stone at the **Begbie** quarry. Other small, hand-operated flagstone quarries exploit micaceous quartzite in the North Thompson area.

## EXPLORATION HIGHLIGHTS

### *Kamloops-Highland Valley*

Strong prices for copper, molybdenum and gold have focused exploration interest on the productive porphyry districts of southern BC, particularly the Guichon and Iron Mask batholiths.

The largest exploration project in the region, and the second largest in the Province, was the **New Afton** copper-gold porphyry project of New Gold Inc (formerly DRC Resources Corp). The project is located at the closed Afton open pit mine site, beside the Trans Canada Highway, ten kilometres west of Kamloops (Figure 4.10). More than 50 people worked on the site for most of the year, and about $18 million will be spent. A total of 2204 metres of underground drifts and crosscuts were excavated to allow for more than 25 000 metres of underground infill drilling along with engineering and metallurgical studies.

Figure 4.10. View showing the pit, portal and surface facilities at the New Afton copper-gold project of New Gold Inc.

A feasibility study begun in late 2005 is expected to be completed by the fourth quarter of 2006. The study, headed by Hatch Ltd, will update the resource estimate and evaluate bulk underground mining methods, tailings deposition, plant design, infrastructure, scheduling and economic analysis of the project. Overall measured and indicated resources, estimated in 2004, total 68 700 000 tonnes grading 1.68% copper equivalent (1.08% copper, 0.85 g/t gold, 2.62 g/t silver and 0.12 g/t palladium), using a cutoff of 0.7% copper equivalent. An additional 7.45 million tonnes is inferred to exist at a slightly lower grade.

Permitting for a new mine is expected in begin in mid-2006 and run concurrently with the feasibility study. The company also plans a substantial 2006 program of underground and surface diamond drilling to explore for new deposits in the area. This will include drilling on the company's claims between the **Ajax** East and West pits, which provided mill-feed to the Afton concentrator prior to closure in 1997. The pits are located about 10 kilometres southeast of the Afton site.

Abacus Mining and Exploration Corp also holds mineral properties in the Afton-Ajax area. In late November, Abacus completed a deal to purchase milling and processing facilities, a tailings storage facility, surface and subsurface rights, permits and infrastructure from Afton Operating Corp, a subsidiary of Teck Cominco Ltd. At the same time, Abacus began drilling in at the past-producing **Ajax** pits. An angle-hole beneath the Ajax West pit intersected 408 metres grading 0.52% copper and 0.31 g/t gold beginning at a depth of 136 metres. This drill program is expected to continue into 2006 and extend to other targets on Abacus' large property.

Earlier in the year, Abacus released resource estimates for two other deposits in the district, based on extensive drilling programs completed in 2004. The **Rainbow** and **DM/Audra** deposits are located between Afton and Ajax and have substantial indicated and inferred resources of low-grade copper-gold mineralization, and good potential for expansion.

The small **Kamloops Gold** property of Williams Creek Exploration Ltd was also explored by drilling during the year. The property is located a few kilometres east of the Afton pit.

In the Highland Valley, Getty Copper Inc conducted metallurgical studies on the **Getty North** porphyry copper deposit located north of Highland Valley Copper. Previous work at Getty North defined a drill indicated and inferred resource of 72.1 million tonnes grading 0.31% copper, including 10.0 million tonnes of oxide grading 0.40%. The company is evaluating the potential for continuous vat leaching of the Getty North oxide mineralization.

The **Rateria** property is located south of the Highmont pits of Highland Valley Copper. A 3D inversion induced polarization survey was completed and two short drillholes were drilled by private company Happy Creek Minerals Ltd. A promising chargeability anomaly was identified beneath previously drilled short holes, of which at least one ended in copper mineralization.

The **Rabbit South** property, located southwest of Kamloops and midway between the Afton and Highland Valley Copper mines, was drilled by Global Hunter Corp. The property hosts calc-alkalic porphyry molybdenum mineralization in the Roper Lake stock. This deposit was explored previously by Cominco Ltd which drilled 79 percussion and 25 diamond-drill holes. The diamond-drill holes are reported to have averaged 0.065% molybdenum over an average thickness of 80.5 metres. The 2005 drilling confirmed the previous drill results.

### *Southern Cariboo-Chilcotin*

Exploration for porphyry copper-gold deposits was the focus of most work in the Cariboo-Chilcotin in 2005. The most significant deposit in this area is the **Prosperity** porphyry gold-copper deposit of Taseko Mines Ltd, located southwest of Williams Lake. The most recent information from the company gives an estimated measured and indicated resource of 491 million tonnes grading 0.43 g/t Au and 0.22% copper. Taseko applied and was granted an extension of the Environmental Assessment Act period to April 30, 2007. The company continues to communicate and consult with area First Nations, and is reviewing and optimizing previous project economic studies.

Near Bluff Lake, further west in the Chilcotin, Newmac Resources Inc drilled the **Newmac** porphyry copper-silver-gold prospect.

The **Lac La Hache** property of GWR Resources Inc was covered by an airborne magnetic-radiometric survey during the year. In addition, a small drilling program tested the Spout Lake magnetite-chalcopyrite skarn

deposits. Further east, the **Iron Lake** property was drilled by Argent Resources Ltd. This grassroots property has a large soil anomaly, and float sampling has returned encouraging values in copper, gold and platinum group metals in an area underlain by pyroxenite.

At the **Fox** property near Canim Lake in the Southern Cariboo, Happy Creek Minerals Ltd reported encouraging surface sampling results from the new **Nightcrawler-Creek** tungsten skarn zone (Figure 4.11). Values of up to 4.25% tungsten have been reported from grab samples. Skarn prospects occur over several kilometres of strike length adjacent to the Deception stock of probable mid-Cretaceous age. Molybdenum, zinc and gold values are known from previous soil and rock sampling.

Figure 4.11. Prospector Dave Ridley (centre) and Ministry staff examine tungsten skarn outcrops in the Nightcrawler-Creek zone on the Fox property of Happy Creek Minerals.

Newmac Resources Inc reported discovery of new molybdenum mineralization on the **Crazy Fox** property north of Little Fort. Trenching and soil sampling indicate the zone could be at least 500 by 200 metres in size. The mineralization appears to be an extension of the nearby Anticlimax molybdenum porphyry prospect.

### *Gold Bridge*

The famous Gold Bridge mesothermal gold-quartz vein camp, BC's most prolific gold district, was quite active in 2005. The most advanced project is the **Bralorne mine** of Bralorne Gold Mines Ltd which operated from 1900 to 1971. A Mine Development Certificate was issued for a new mine in 1995; however, low prices since then have delayed development. Resource calculations reported at that time gave 406 584 tonnes at a grade of 10.6 g/t gold above the 800 level in the Bralorne mine, and 26 115 tonnes grading 9.6 g/t gold for the Upper Peter vein on the Loco property.

In 2005, Bralorne conducted underground development and diamond drilling in the **Upper Peter** and **51B** areas. Over 1000 metres of underground development was completed in these two areas. In addition, test milling of about 21 000 tonnes of low-grade stockpiles and old tailings dumps, produced 10 dore bars and 222 bags of flotation concentrate. The actual gold production has not been reported yet. Most of the concentrate was sold to Barrick Goldstrike Mine in Nevada for further processing. In addition to the underground workings, infrastructure on the property includes an assay lab, mine offices and dry, a partially completed tailings pond and a small gravity/flotation pilot mill with a capacity of about 100 tonne-per-day.

The **Congress** gold property is located north of Bralorne on the north side of Carpenter Lake. The property had some mining and substantial exploration between 1913 and 1989, including six adits with over 2300 metres of underground workings. An aggregate resource of several hundred thousand tonnes of refractory gold mineralization has been defined in the **Howard**, **Lou** and **Congress** vein zones. Surface exploration in 2005 included excavator trenching and diamond drilling. The trenching is reported to have discovered the **Golden Ledge** zone, thought to be the northern extension of the Lou zone, as well as an extension of the Congress zone. Drilling helped define grade and structure in the Howard zone.

The **Elizabeth** property in the Shulaps Range, northeast of Goldbridge, was the subject of a large drilling program. The property hosts narrow, mesothermal quartz veins with local, very high gold grades. The drilling was successful in extending the **Southwest** vein zone to the north. In addition, several narrow zones (generally less than one metre wide) of high copper (to 0.64%) and molybdenum (to 0.598%) were encountered.

### *Okanagan*

Porphyry molybdenum deposits and gold-quartz vein deposits were the main exploration targets in the Okanagan in 2005. The new **WCL** limestone quarry was permitted for production (see above).

The **Elk** (Siwash North) mesothermal gold-quartz vein project of Almaden Minerals Ltd is the largest and most advanced project in the area with over 8300 metres of drilling in 2005. This large drilling campaign was aimed at expanding the known resource on the property. Almaden owns a 110 tonne-per-day, modular, gravity-flotation mill which is stored at a site near the property.

Elk is located 45 kilometres southeast of Merritt, and just 2 kilometres south of Highway 97. Previous high-grade mining produced 1609.6 kilograms gold (51 750 ounces) from 16 700 tonnes of direct-shipping ore from open-pit and underground operations between 1992 and 1995. Grades averaged about 96 g/t gold.

A May 2004 resource estimate will be updated during winter 2006. The 2004 estimate was completed prior to nearly 20 000 metres of drilling in 2004 and 2005, and using drill data for the **Siwash B** and **WD** veins, just two

of eight known mesothermal vein structures on the property. Global (bulk-tonnage and underground mineable) measured and indicated resources were reported to total 668 300 tonnes grading 9.66 g/t gold (207 600 ounces) plus an additional 1 317 200 tonnes grading 4.91 g/t gold (207 800 ounces) in the inferred category. Included in the global figures is a higher grade, underground-mineable resource totaling 164 000 tonnes grading 33.69 g/t gold in the measured and indicated category, plus another 195 200 tonnes grading 16.38 g/t gold in the inferred category.

Searching for additional epithermal gold-silver mineralization, Ecstall Mining Corp conducted drilling in the area of the **Dusty Mac** mine near Okanagan Falls. The mine produced 93 372 tonnes of quartz breccia ore from a small open pit in 1975 and 1976, at a recovered grade of 6.49 g/t gold and 113 g/t silver. The nearby **Vault** property has a small resource of similar epithermal mineralization; however, only limited sampling was completed in 2005.

The **Tadpole Lake** molybdenum porphyry prospect, locate north of the Brenda mine and west of Kelowna, was drilled by partners Molycor Gold Corp and Goldrea Resources Corp. The property was explored by percussion drilling by Cominco Ltd in the past. The companies also drilled a large number of very short holes into the **Crow-Rea** molybdenum vein/porphyry prospect south of Brenda.

The **Isintok** molybdenum-copper-silver prospect, located southwest of Summerland, was explored by Jasper Mining Corp. An airborne geophysical survey was completed and drilling was slated for late fall. Drilling by Anaconda Canada Exploration Ltd in 1981 identified a shallow, low-grade porphyry molybdenum-copper resource. Jasper also acquired the neighboring **Alaric** copper prospect.

### *Fraser River-Merritt-Ashcroft*

The past producing **Craigmont** copper mine, located outside Merritt, was the subject of a large exploration project by Christopher James Gold Corp. Developed on a series of copper skarn deposits, the mine operated from 1962 to 1982. About 34.85 million tonnes of ore were milled with an average recovered grade of about 1.15% copper and very minor silver and gold values. In 2005, Christopher James Gold compiled previous results, conducted geophysical surveys and drilled several holes in the **Embayment** area west of the mine. The drilling targeted previously known skarn mineralization and anomalies identified in the new surveys. Drilling from the existing underground workings is contemplated for 2006.

Almaden Minerals Ltd and partner companies explored several new low-sulphidation epithermal gold-silver targets in the newly emerging **Spences Bridge gold belt**, located between Merritt, Spences Bridge and Lytton. The area has excellent access due to the extensive logging road network. Gold-bearing quartz veins and associated clay alteration zones are hosted in volcanics of the Spences Bridge Group. Exploration in this belt began in 2001 when Almaden prospector Ed Balon began following up Regional Geochemical Survey anomalies. Mineralization has now been identified on four separate properties (**Skoonka Creek**, **Prospect Valley**, **Merit** and **Nicoamen River**) and regional prospecting is continuing. Three additional properties were acquired by Almaden in late 2005, and the company now controls about 426 square kilometres of tenure in the belt.

The **Skoonka Creek** project (formerly Sam) was explored by drilling in late 2005 with very encouraging results. The property is located southwest of Spences Bridge and accessed by roads from Lytton. Four separate mineralized showings were discovered by Almaden in late 2004, and the property was optioned to Strongbow Exploration Inc early in 2005. Strongbow conducted surface surveys and drilled eleven holes, seven at the **JJ** vein showing (Figure 4.12) and four at nearby targets. Results were very good, highlighted by an intersection of 18.4 g/t gold over 12.8 metres in hole SC-008, including a high-grade section of 2.91 metres grading 49.5 g/t gold. The drilling has so-far traced the mineralization over a strike-length of 350 metres at this showing, and several other targets require detailed follow-up. Mineralization consists of delicately banded, low-sulphidation epithermal quartz veins surrounded by clay alteration zones (Figure 4.13).

Figure 4.12. Geologists examine the JJ gold-silver showing on the Skoonka property of Strongbow/Almaden.

The **Prospect Valley** property, located west of Merritt, was optioned by Almaden to Consolidated Spire Ventures Ltd. Reconnaissance prospecting has identified several float and bedrock occurrences including the **PV** area where previous prospecting discovered float grading up to 43.3 g/t gold. At the **NIC** vein zone, 2005 exploration identified an area about three kilometres long with anomalous gold-in-soils and scattered veins in hand trenches.

Figure 4.13. Banded epithermal quartz, Hole SC-007, Skoonka Creek property (section runs 47.8 g/t gold over 1.57 metres).

The **Merit** property, wholly owned by Almaden, adjoins the Prospect Valley to the east. Alteration and veining has been discovered over several kilometres and a large soil geochemical and prospecting program was completed in 2005. Channel sampling of veins and alteration in a hand trench on **Sullivan Ridge** returned 7.2 g/t gold over 1.8 metres.

South of Spences Bridge, Almaden worked on the **Nicoamen River** property. Soil sampling and prospecting was directed at locating the source of float boulders assaying up to 55.5 g/t gold.

Further northwest in the Spence Bridge gold belt, epithermal gold-silver mineralization is also the target on the **Blustry Mountain** (Rand) project of Wyn Developments Ltd. The property is located east of Lillooet and northwest of Lytton. An induced polarization survey was completed in 2005, covering an area of alteration with a coincident polymetallic soil anomaly.

Limited geophysical and geological work was completed on the **Duke** (Copper Canyon) porphyry copper-gold-silver prospect located southwest of Merritt, but drilling is contemplated for late 2005 or early 2006. The property is optioned by Freegold Ventures Ltd from Silver Quest Resources Ltd. Drilling in 1963 returned encouraging copper values (*e.g.* 0.63% copper over 57.9 metres); however, gold was not included in the assay work at that time and little work has taken place since. Recent surface grab sampling has shown gold values in the range of 0.21 to 0.48 g/t gold.

The **Red Hill** massive sulphide copper-zinc-silver property near Ashcroft was active again in 2005. The property was optioned by Avalon Ventures Ltd from Teck Cominco Ltd. Avalon did geological mapping and developed a new structural model that was tested by six drillholes in two areas. The holes are reported to have intersected broad intervals of hydrothermally altered felsic volcanic rocks. One hole hit two narrow bands of massive sulphide mineralization. Down-hole pulse electromagnetic surveys were also completed.

### *Revelstoke-Shuswap-North Thompson*

This area is best known for its stratiform base-metal deposits in rocks of the Kootenay Terrane. Several promising projects received significant exploration work in 2005.

Selkirk Metals Corp, a new company formed to hold the base-metal assets of Cross Lake Minerals Ltd, was active on several properties north of Revelstoke. Two significant discoveries were reported from the **Ruddock Creek** property, optioned from Doublestar Resources Ltd. Previous work by Falconbridge Ltd and Cominco Ltd, defined an inferred mineral resource of 1.5 million tonnes grading 8.4% zinc and 1.6% lead within the **E-zone**. Deep holes west of the "E-fault" intersected high-grade mineralization interpreted to be the faulted offset of the E-zone. The best hole, RD-05-113, intersected 14.05 metres grading 15.79% zinc, 3.33% lead and 5.2 g/t silver beginning at a depth of 708.5 metres. Selkirk believes the results show the E-zone could extend for at least 380 metres west of the E-fault, opening up a large area for expansion of the resource. In addition, the company conducted surface geochemical and geophysical surveys in the **Oliver Creek** area, about 5 kilometres west of the E-zone. An 800-metre long soil anomaly has been identified. High-grade float boulders have been discovered along this trend, and a chip-sample returned 18.62% zinc and 4.55% lead over 1.5 metres.

Similar mineralization was drill-tested on the **Broken Hill** property by Timer Explorations Inc. This property is located northeast of Avola, and west of Ruddock Creek.

Selkirk Metals also reported the discovery of high-grade massive sulphide mineralization at the **LJ** property, located 35 kilometres north of Revelstoke. The drilling targeted the source of high-grade float boulders at the toe of a receding glacier. Hole LJ005-02 intersected 10.7% zinc, 4.9% lead and 9.4 g/t silver over 5.0 metres. Selkirk also conducted work on the **Ghost** and **Kneb** base-metal properties in 2005.

Only limited work was completed on the large group of properties held by Orphan Boy Resources Inc in the **Goldstream mine** area, north of Revelstoke. Drilling was conducted by Orphan Boy on the **Alfie** polymetallic vein targets on the **Rain** property.

A large program of drilling and metallurgical studies was expected to be completed on the **McKinnon Creek (J & L)** polymetallic deposit; however, financial problems with BacTech Mining Corp caused the cessation of work early in the year. Located 45 kilometres north of Revelstoke, the J & L Main zone comprises an arsenopyrite-bearing massive sulphide body with a reported potential resource of 3.6 million tonnes grading 7.24 g/t gold, 81 g/t silver, 3.0% lead and 3.83% zinc.

Two significant projects were active in the Paleozoic Eagle Bay Assemblage near the Samatosum mine east of Barriere. Amarc Resources Ltd drilled the **Max** property, also known as the Homestake or Kamad Silver mine. The

drillholes were successful in locating the downdip extension of previously known silver-rich, baritic Kuroko-type VMS horizons. However, the mineralization was found to be cut-off by a fault in Homestake Creek and the project was terminated. Intersections such as 9.0 metres grading 1.71 g/t gold, 252 g/t silver and minor copper, lead and zinc were encountered. Two rounds of drilling were also completed on the nearby **Extra High** (Kamad 7) massive sulphide deposit by Bronx Ventures. The property adjoins the past-producing Samatosum mine property, and the deposit is along strike from the Rea Gold (Discovery) massive sulphide deposit. The drilling confirmed and expanded the known extent of high-grade, arsenical massive sulphide mineralization. The best intersection was in hole 05-06 which cut 9.69 metres grading 7.82 g/t gold, 67.8 g/t silver, 0.64% copper, 4.3% lead, 5.16% zinc and 0.97% arsenic.

A new gold discovery, **Jake**, was made west of Clearwater by geologist Mo Kaufman. The original property was optioned to Rimfire Minerals Corp which acquired a large property surrounding the discovery. Rimfire sampling confirmed high gold values, with up to 38.8 g/t returned from float boulders. Mineralization consists of quartz with pyrrhotite, chalcopyrite, pyrite and bismuthinite and is hosted in basalt of the Fennell Formation.

Finally, near Blue River in the North Thompson valley, Commerce Resources Corp completed drilling on the **Upper Fir** and **Bone Creek** prospects. Targeting carbonatite-hosted tantalum-niobium mineralization, the drilling was successful in intersecting carbonatite layers up to 16.79 metres in thickness. Assays are awaited. Commerce also owns the nearby **Fir** deposit, which has an indicated resource of 5.65 million tonnes grading 203 g/t $Ta_2O_5$ and 1074 g/t $Nb_2O_5$ and the **Verity** deposit, located 10 kilometres north, with a resource of 3.06 million tonnes grading 196 g/t $Ta_2O_5$, 646 g/t $Nb_2O_5$ and 3.2% $P_2O_5$.

### *Aspen Grove-Princeton-Keremeos*

This part of the region was moderately active in 2005. Industry interest was mainly focused on porphyry copper-gold-molybdenum prospects. Copper Belt Resources Ltd drilled over 1200 metres on the **Ketchan** copper-gold porphyry prospect near Aspen Grove. The holes were successful in confirming the presence of alkalic porphyry copper-gold mineralization. Assays are awaited. The **Whipsaw** porphyry prospect near Princeton was explored by private company Canfleur Mining Inc. The property hosts broad zones of low-grade porphyry-style copper-molybdenum mineralization.

Near Hedley, the **Panorama Ridge** gold skarn project of Goldcliff Resources Corp was active again in 2005. Located a few kilometres east of the historic Nickel Plate gold mine, the property has numerous targets with wide zones of low-grade gold values. Extensive trenching and drilling were completed in 2005, focusing on the York-Viking and Nordic zones. The latter returned several higher-grade channel samples.

## ACKNOWLEDGMENTS

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# KOOTENAY REGION

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Regional Geologist, Cranbrook

## SUMMARY AND TRENDS

2005 was a good year for mineral and coal exploration in southeastern British Columbia. Exploration expenditures increased by 22% over 2004. Major programs focused on molybdenum, coal, sedex-style lead-zinc, or gold, reflecting strong prices for these commodities.

The highlight of 2005 was the application for, and approval of, a Small Mine permit for the MAX molybdenum project near Trout Lake, following a major underground rehabilitation and diamond drilling program (see below). Other major projects included ambitious drilling programs on the Jersey-Emerald and Sphinx molybdenum prospects.

The second deep diamond-drill hole on the Sullivan Deeps project near Kimberley was completed; as with hole SD1 in 2004, SD2 successfully intersected the Sullivan stratigraphic horizon which hosts the prolific sedex Sullivan Mine (past producer). Four other deep drillholes in the East Kootenays successfully intersected the same target horizon; three of these represented the deepening of drillholes begun in 2004.

Coal exploration drilling occurred at several localities, including properties such as Lodgepole, Burnt Ridge and Castle/Bare Mountains, that are not within current operations areas.

Another large diamond drilling program on the Greenwood Gold project led to extension of the Grenoble deposit, and a decision to begin to assess the feasibility of production.

Exploration expenditures in 2005 are projected to be about $14 million, a 22% increase over the previous year (Figure 5.1). The portion of this total devoted to metals exploration was about 61%; the remainder was for coal (37%) and industrial minerals (2%).

An estimated 55 000 metres of exploration drilling was carried out in the Kootenay region in 2005, a decline from the previous year (Figure 5.2). Of this total, 55% was drilling for metals, 43% for coal (not including in-pit drilling) and 2% for industrial minerals.

There were approximately 23 major exploration programs in the Kootenays in 2005 (defined as programs with greater than $100 000 in expenditures with ground disturbance), down from 29 in 2004.

Figure 5.1. Annual exploration spending, in millions of dollars, Kootenay Region.

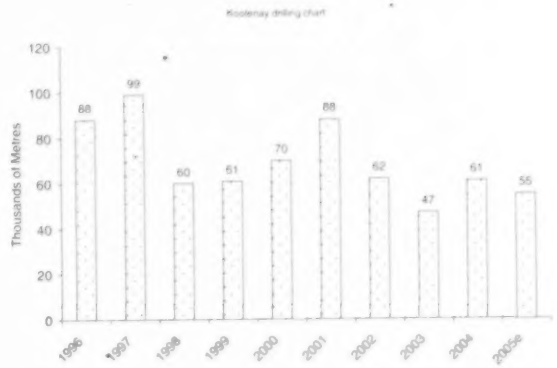


Figure 5.2. Annual exploration drilling, in thousands of metres, Kootenay Region. Note that prior to 2004 coal mine definition (in-pit) drilling was included in the total.

## OPERATING MINES AND QUARRIES

Current major producing mines and quarries in the Kootenay Region are shown on Figure 5.3 and Table 5.1.

### METALS

There were no metal mines operating in the Kootenay Region in 2005.

### COAL

Elk Valley Coal Corporation, the world's second-largest supplier of seaborne metallurgical coal, operates

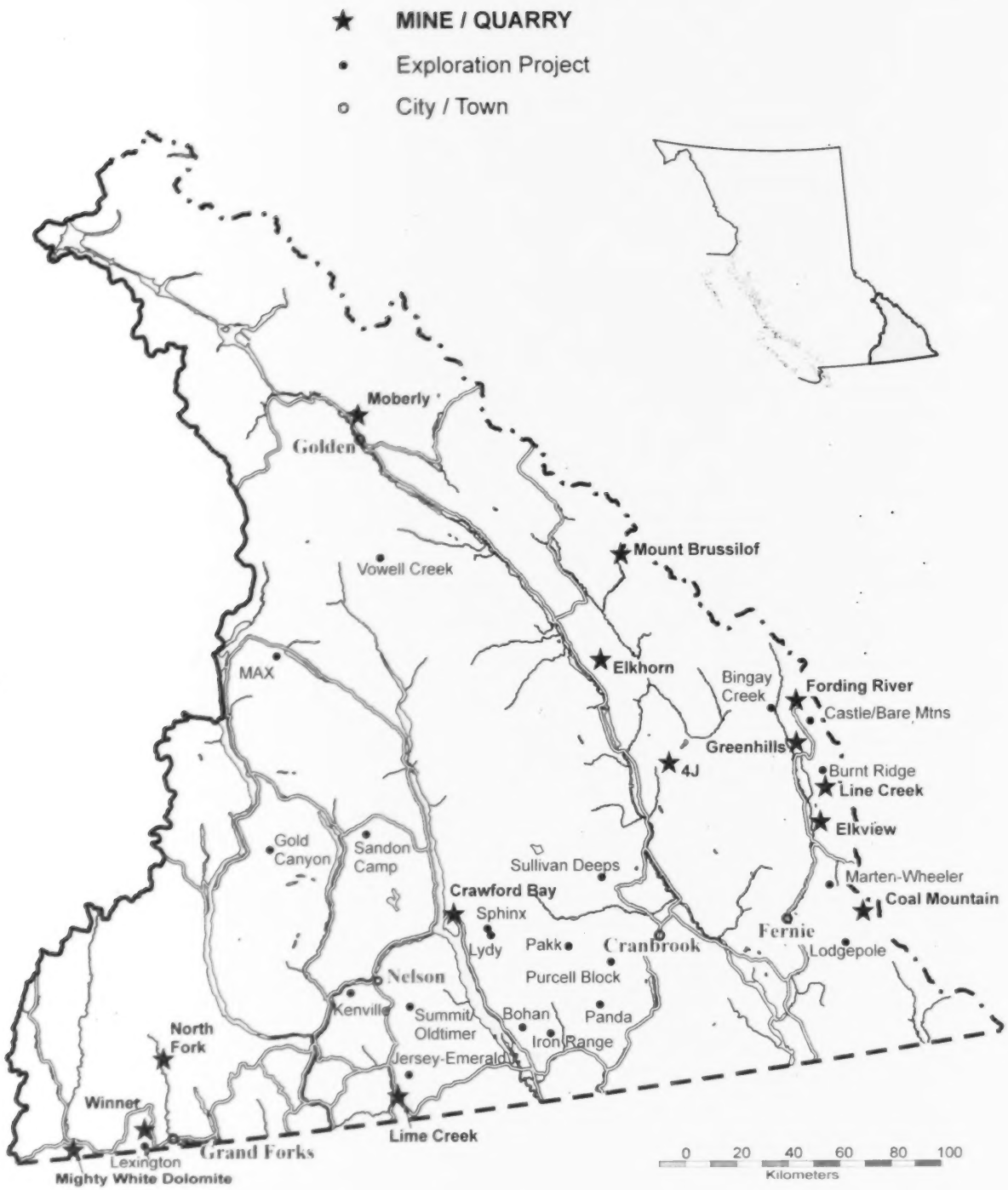


Figure 5.3. Mines, quarries and major exploration projects, Kootenay Region, 2005.

## TABLE 5.1. PRODUCING MINES AND QUARRIES, KOOTENAY REGION, 2005

| Mine | Operator | Deposit Type / Commodity | Forecast Production in 2004 (tonnes or kilograms) | No. of employees | Proven and Probable Reserves (at Dec. 31, 2004) | Reference for Reserves |
|---|---|---|---|---|---|---|
| **Coal** | | | | | | |
| Coal Mountain | Elk Valley Coal Corporation | Metallurgical coal | 2 350 000 t | 178 | 28 000 000 t | W. Fleming |
| Elkview | Elk Valley Coal Corporation | Metallurgical coal | 6 000 000 t | 737 | 249 000 000 t | W. Fleming |
| Fording River | Elk Valley Coal Corporation | Metallurgical coal | 9 300 000 t | 898 | 257 000 000 t | W. Fleming |
| Greenhills | Elk Valley Coal Corporation | Metallurgical coal | 5 100 000 t | 463 | 98 000 000 t | W. Fleming |
| Line Creek | Elk Valley Coal Corporation | Metallurgical and thermal coal | 2 500 000 t (including 300 000 t thermal) | 280 | 20 000 000 t | W. Fleming |
| **Industrial Minerals** | | | | | | |
| 4J | Georgia-Pacific Canada Inc | Gypsum | | 8 to 10 | | |
| Crawford Bay | Imasco Minerals Inc | Dolomite | | | | |
| Elkhorn | BPB Canada Inc | Gypsum | | 21 | | |
| Lime Creek | Imasco Minerals Inc | Limestone | | | | |
| Moberly | Heemskirk Canada | Silica sand | | 11 | | |
| Mount Brussilof | Baymag Inc | Magnesite | | 25 | | |
| North Fork | Roxul (West) Inc | Monzonite (mineral wool) | | | | |
| Rock Creek | Mighty White Dolomite Ltd | Dolomite | | 13 | | |
| Winner | Roxul (West) Inc | Diorite (mineral wool) | | | | |

five large open pit coal mines in the Elk valley area (see Figure 5.3). Coal mines again benefited from strong international markets and favourable prices in 2005. Projected total coal production at the company's **Coal Mountain**, **Elkview**, **Line Creek** (Figure 5.4), **Greenhills** (Figure 5.5) and **Fording River** operations is 25.25 million tonnes of clean coal (Table 5.1). This volume is predominantly metallurgical coal.

Figure 5.4. The Line Creek Mine.

## INDUSTRIAL MINERALS

The Kootenay region continues to be an important source of a variety of industrial minerals, including magnesite, gypsum, silica, dolomite, limestone, graphite, tufa, flagstone, slate, dimension stone and aggregate. Highlights of this production follow (*also see* Table 5.1 and Figure 5.3).

Baymag Inc produces high-quality magnesite from its open pit mine near **Mount Brussilof** (MINFILE 082JNW001), northeast of Radium. Magnesite is transported by truck to Exshaw, Alberta, where the company has facilities for producing calcined and fused magnesia (MgO). Production in 2005 was projected to be approximately 180 000 tonnes.

Figure 5.5. The Greenhills Mine, looking northwest.

There are two gypsum producers in the Kootenay region. BPB Canada Inc operates the **Elkhorn** mine (MINFILE 082JSW021) east of Windermere, and Georgia-Pacific Canada Inc operates the **Four J** mine (MINFILE 082JSW009) southeast of Canal Flats. Production at the Elkhorn mine was projected to be approximately 550 000 tonnes for 2004. Production for the Four J mine was projected to be between 250 000 and 300 000 tonnes.

Silica is produced by HCA Mountain Minerals (Moberly) Ltd from the **Moberly** mine (MINFILE 082N001) and plant, north of Golden. 2005 production was predicted to be 65 000 tonnes.

Imasco Minerals Inc produces a variety of crushed and ground rock products at its Creston Operations Plant at Sirdar; rock types include limestone, dolomite, granite and quartzite. Raw sources for these products include an underground dolomite mine at **Crawford Bay** (MINFILE 082FNE113), a limestone quarry at **Lime Creek** (MINFILE 082FSW307) east of Salmo and a granite quarry at **Sirdar** (MINFILE 082FSE072).

Mighty White Dolomite Ltd produces a range of crushed and ground dolomite products from its quarry (MINFILE 082ESE200) and plant at **Rock Creek**.

The **Winner** diorite quarry (MINFILE 082ESE265; Figure 5.6), west of Grand Forks, and the **North Fork** syenite-monzonite quarry, north of Grand Forks, both ship to the Roxul (West) Inc mineral wool manufacturing plant in Grand Forks.

Crystal Graphite Corporation produces and ships high-purity flake graphite from its **Black Crystal** property (MINFILE 082FNW260) and mill west of the Slocan valley.

Figure 5.6. The Winner diorite quarry near Grand Forks, which provides feed for the Roxul (West) Inc rock wool plant in Grand Forks. The drill in the background is preparing for a blast.

## EXPLORATION HIGHLIGHTS

Major 2005 mineral and coal exploration projects in the Kootenay Region are listed in Table 5.2. These 23 major exploration programs (shown in Figure 5.3) each involved expenditures in excess of $100 000 on work that included ground disturbance, for example, drilling (surface or underground), trenching or bulk sampling. Most of the following information was extracted from company press releases and Internet websites, as well as from discussions with company project geologists.

### EAST KOOTENAYS

The second phase of Stikine Gold Corporation's Sullivan Deeps project continued into 2005. Following the success of the first phase, highlighted by the intersection of the target Sullivan horizon with associated sedex-style mineralization in drillhole SD1, the company stepped out approximately 1.3 km to the northeast to drill SD2 in 2005. Again the company was successful in intersecting the Sullivan horizon, but the results were not as positive.

The **Sullivan Deeps** project is targeting a postulated "sister deposit" to the Sullivan ore body (MINFILE 082FNE052), which sustained the Sullivan Mine and the town of Kimberley for over 90 years, until its permanent closure in late 2001. Deep drilling to the north of the Sullivan, and north of the Kimberley normal fault, dates back to the 1970's. In the mid-1990s Cominco drilled 4 km northwest of the Sullivan, penetrating to appropriate depth, but the Sullivan horizon was faulted out. However, a down-hole geophysical survey indicated the presence of a large conductor in close proximity to the bottom of the hole. Stikine Gold's first deep hole, SD1 in 2004, was sited at the same location as the last Cominco drillhole, and was oriented to intersect the geophysical anomaly. SD1 intersected bands of massive and laminated zinc- and lead-bearing sulphides, reminiscent of the Sullivan deposit, at the Sullivan horizon and at a drill depth of 2736 metres. A follow-up geophysical survey suggested that the 10.5-metre zone containing the sedex-style mineralization was potentially on the edge of a large new deposit. Drillhole SD2, in 2005, was sited to be nearer the centre of this projected deposit. The Sullivan horizon, and presumably the geophysical target, were intersected at a drill depth of 2365 metres in SD2. The target turned out to consist of a 0.8-metre interval of laminated and semi-massive and brecciated sulphides mainly composed of pyrrhotite (source: Stikine Gold news release). This is believed to be analogous to the barren sulphide sheet found to the east of the Sullivan Mine.

Despite this disappointing result, evaluation of all the available information suggests that the central part of the target at the Sullivan Deeps project may not have been drill-tested. The company is proposing to drill a third hole in 2006 (SD3), to test the idea that the centre of the hypothetical deposit lies to the north of SD1 and west of SD2.

Both the Sullivan deposit and the Sullivan Deeps target are within a fault-bounded Middle Proterozoic structural sub-basin within the Aldridge Formation (Purcell Supergroup). Similar basins in the Aldridge

## TABLE 5.2. MAJOR EXPLORATION PROJECTS, KOOTENAY REGION, 2005

| Property | Operator | MINFILE | NTS | Commodity | Deposit Type | Work done | Metres of drilling (estimated in some cases) | Riding |
|---|---|---|---|---|---|---|---|---|
| Bingay Creek | Hillsborough Resources Ltd | 082JSE011 | 82J/02W | coal | sedimentary | RC EN | 1371 | East Kootenay |
| Bohan | Eagle Plains Resources Ltd | 082FSE125 | 82F/07E | Pb, Zn, Ag | manto; sedex | G, GC DD | 220 | Nelson-Creston |
| Burnt Ridge | Elk Valley Coal | 082JSE001 | 82G/15W | coal | sedimentary | RC A | 4496 | East Kootenay |
| Castle Mountain/Bare Mountain | Elk Valley Coal | 082JSE006, 008 | 82J/02W | coal | sedimentary | RC A | 4858 | East Kootenay |
| Fording River (Mt. Turnbull) | Elk Valley Coal | 082JSE012 | 82J/02W | coal | sedimentary | RC | 2278 | East Kootenay |
| Gold Canyon | Columbia Yukon Explorations Inc | - | 82F/13W | Au, Ag, Pb | polymetallic skarn | A, TR DD | 571 | Nelson-Creston |
| Iron Range | Eagle Plains Resources Ltd | 082FSE014-028 | 82F/01W | Pb, Zn, Ag Cu, Au | sedex IOCG | G, GC DD | 945 | Nelson-Creston |
| Jersey-Emerald | Sultan Minerals Inc | 082FSW009, 010, 011, 218 | 82F/03E | Mo, W | porphyry (Mo) | DD | 2500 | Nelson-Creston |
| Kenville | Gold Standard Resources | 082FSW086 | 82F/06W | Au, Cu, Ag | porphyry/mesothermal vein | GC TR | 0 | Nelson-Creston |
| Lexington | Merit Mining Corp | 082ESE041, 042 | 82E/02E | Au, Cu | mesothermal vein/ polymetallic vein | DD IP, MG | 3195 | West Kootenay-Boundary |
| Line Creek (MSA West Extension) | Elk Valley Coal | 082GNE020 | 82G/15W | coal | sedimentary | RC | 7640 | East Kootenay |
| Lodgepole | Cline Mining Corporation | 082GSE028 | 82G/07 | coal | sedimentary | FS, EN DD | 1205 | East Kootenay |
| Lydy | Jasper Mining Corporation | 082FNE166 | 82F/10E | Mo | porphyry (Mo) | DD GC | 1166 | |
| Marten-Wheeler | Elk Valley Coal | 082GNE006 | 82G10/W | coal | sedimentary | A | 0 | East Kootenay |
| MAX | Roca Mines Inc | 082KNW003, 004 | 82K/12E | Mo | porphyry | FS, EN DD | 3101 | Nelson-Creston |
| Pakk | Golden Chalice Resources/Klondike Gold Corporation | 082FNE115, 117 | 82F/08E | Zn, Pb, Ag | sedex | DD | 706 | East Kootenay |
| Panda | Klondike Gold Corporation | 082FSE110 | 82F/08E | Zn, Pb, Ag | sedex | DD | 1732 | East Kootenay |
| Purcell Block | Ruby Red Resources | 082FSE116 | 82F/08E | Au | vein | P, G, GC VLF DD | 227 | East Kootenay |
| Sandon Camp | Klondike Silver Corporation | 082FNW043 | 82F/14W | Ag, Pb, Zn | polymetallic vein | GC, TR DD | 676 | West Kootenay-Boundary |
| Sphinx | Eagle Plains Resources Ltd | 082FNE004, 094, 095 | 82F/10E | Mo, W | porphyry Mo | G, GC, A DD | 3330 | |
| Sullivan Deeps | Stikine Gold Corporation | - | 82F/16E | Zn, Pb, Ag | sedex | DD | 2750 | Columbia River-Revelstoke |
| Summit/Oldtimer | Auramex Resource Corp | 082FSW081, 313 | 82F/06E | Au | polymetallic vein | DD | 2306 | West Kootenay-Boundary |
| Vowell Creek | Jasper Mining Corporation | 082KNE009 | 82K/15W | Ag, Pb, Zn, Au, graphite | polymetallic vein; sedex | DD AB-MG, AB-EM | 1224 | Columbia River-Revelstoke |

Formation have been found throughout the Purcell Basin, and for several years these have been sites of major and junior-company efforts to find Sullivan-style mineralization at the Sullivan horizon. In 2005, as in previous years, this work was carried on by Klondike Gold Corporation and Eagle Plains Resources Ltd.

Klondike Gold (and/or Golden Chalice Resources Inc) drilled at four locations in 2005, searching at all of them for deep Sullivan-style targets. On the **Pakk** property (MINFILE 082FNE115, 117; Figure 5.7), approximately 30 km southwest of Kimberley, Golden Chalice extended a drillhole commenced in 2004 for an additional 706 metres (for a total depth of 1778 metres). The site is believed to coincide with a structural sub-basin, and the results of the 2004/05 drilling provide confirmation. Specifically, the Sullivan horizon is anomalously thick at this site, and it is underlain by a thick succession of pebble fragmental; both of these characteristics are reminiscent of the Sullivan ore body itself. The Sullivan horizon was found to contain contorted and altered sediments with some fragmentation, along with widespread pyrrhotite and minor sphalerite (source: Klondike Gold news release).

Figure 5.7. Drilling on the Pakk property.

Further west in the **Panda** sub-basin (MINFILE 082FSE110), Klondike Gold Corporation extended a diamond-drill hole begun in 2004 to Sullivan time. As with two earlier drillholes in the same basin, this drillhole intersected an anomalously thick Sullivan horizon and fragmentals. The 70-metre-thick Sullivan horizon (intersected at approximately 1200 metres) contained visible lead and zinc sulphides, and, when taken in context with previous drilling in the same basin, the 2005 Panda hole is suggestive of possible sedex-style mineralization to the south (source: Klondike Gold news release).

Klondike Gold then moved south within the Panda sub-basin to a location known as the **Irishman** (tabulated with the Panda in Table 5.2), to drill another deep hole to Sullivan time. This site is near the south end of the sub-basin and is adjacent to the northeast-trending Moyie Fault. Sullivan horizon was intersected at approximately 1400 metres. As predicted, the thickness of the Sullivan horizon, and the amount of sulphide minerals, were greater than in the Panda drillhole. The Sullivan horizon is underlain by a 30-metre thick fragmental unit.

Eagle Plains Resources Ltd drilled on its **Iron Range** (MINFILE 082FSE014 to 28) and **Bohan** (includes MINFILE 082FSE125) properties near Creston in 2005. There are two targets on the Iron Range property, iron oxide copper-gold (IOCG) associated with the Iron Range Fault, and sedex lead-zinc associated with the Sullivan horizon. Four diamond-drill holes were drilled this year, for a total of 945 metres. Two drillholes tested an alteration zone on the east flank of the Iron Range system, and results are reminiscent of a Sullivan-type conduit. Characteristics include fragmental textures and presence of tourmalinite. Two other holes tested a soil geochemical anomaly on the west flank of the system. One of these holes appears to have intersected the Sullivan horizon. Overall, 2005 drilling results appear to confirm the existence of a sub-basin at Sullivan time.

At the Bohan property, the target is sedex or manto-style mineralization within younger formations of the Purcell Supergroup. Significant base-metal soil geochemical anomalies drove the 2005 drilling program which consisted of further geochemical sampling and one diamond-drill hole (source: Eagle Plains news releases).

Eagle Plains Resources Ltd also carried out a major diamond drilling program on its **Sphinx** molybdenum property (MINFILE 082FNE004, 94, 95; Figure 5.8) near Gray Creek Pass, 45 km west of Kimberley. The Sphinx property is underlain by sedimentary strata of the upper part of the Purcell Supergroup, including the Dutch Creek and Mt. Nelson formations, which have been intruded by Cretaceous quartz monzonite. Molybdenum (and associated tungsten) mineralization is associated with the intrusive contacts, and occurs as disseminations and within quartz-pyrite stockwork veins hosted by both sedimentary and intrusive rocks (source: Eagle Plains Resources news release). Drill data to date outline a 400 by 1000 metre mineralized area that is open to the west and to depth. Best results were obtained in drillhole 12, which included 185 metres grading 0.074% $MoS_2$, including 11 metres grading 0.172%, and which ended in mineralization. A 47-metre interval in hole 2 averaged 0.167% $MoS_2$, which included a 7-metre interval containing 0.514%. A total of 3333 metres, in 14 drillholes, was drilled.

The **Lydy** molybdenum property is adjacent to the Sphinx and has similar geology. Jasper Mining Corporation carried out a soil sampling and diamond drilling program on the Lydy in 2005; this included 1166 metres of drilling in 6 holes.

Figure 5.8. Drilling on the Sphinx property.

At the **Vowell Creek** property, south of Golden in the Purcell Mountains, Jasper Mining Corporation carried out air-borne geophysics and follow-up diamond drilling. The Vowell Creek property is underlain by sediments of the Hadrynian Horsethief Creek Group and includes the Ruth Vermont mine (past-producer, MINFILE 082KNE009). Mineralization in the area is mainly associated with polymetallic veins, and typically includes base and precious metals. Two geophysical anomalies (low resistivity) were drilled, for a total of 1224 metres in 8 holes. The anomalies unexpectedly turned out to be due to the presence of graphite. Graphite was found to occupy two trends, and is observed to occur within zones up to 30 cm in true thickness (source: Jasper Mining news release). The company is now re-evaluating the Vowell Creek property for its graphite potential in addition to its base and precious metal potential.

Ruby Red Resources carried out exploration for gold on a number of properties in the Cranbrook area. A group of properties to the west of Cranbrook, including the **Zeus** and **Eddy**, is collectively referred to as the "Purcell block" of claims (includes MINFILE 082FSE116). Gold is found in quartz veins, and is associated with shear zones and faults. Host rocks are formations of the Purcell Supergroup. Work in 2005 included 227 metres of drilling in 10 holes.

## EAST KOOTENAY COALFIELDS

Exploration in the coal-bearing Jurassic-Cretaceous strata of the Mist Mountain Formation (collectively known as the East Kootenay coalfields where they occur in British Columbia) again contributed greatly to the overall exploration figures in the southeast. Not including in-pit drilling at Elk Valley Coal Corporation's five active metallurgical coal mines, exploration expenditures totalled $5.1 million and the total amount of rotary and diamond drilling totalled 23 400 metres. Three of the five operations carried out major exploration programs, most on sites that don't currently contribute to mine resource figures (that is, they are located at some distance from current operations areas). In addition, Cline Mining Corporation began their evaluation of the Lodgepole coal property and work on the Bingay Creek deposit by Hillsborough Resources Limited was extended. Some of the major programs, as previously defined, are discussed here in order from south to north, with an emphasis on the new potential resource areas.

The **Lodgepole** coal property (082GSE028) is located southeast of Fernie in the southern part of the Crowsnest coalfield (Fernie Basin). It comprises a dip-slope in Mist Mountain Formation (Figure 5.9), wherein two major seams (numbers 1 and 2, near the base of the section) and several minor seams are exposed near the surface. Cline Mining Corporation carried out a 15-hole fill-in diamond drilling program in 2005, for a total of 1205 metres, to confirm resources and quality of low-volatile PCI and metallurgical coal on the property. Cline also began baseline environmental monitoring and engineering/feasibility studies in anticipation of a potential Environmental Assessment certification application in the near future.

Figure 5.9. Lodgepole coal property, looking north. Strata dip to the left (west) in a dip-slope setting.

**Burnt Ridge** (MINFILE 082JSE001) is north of Elk Valley Coal's Line Creek Operations. Elk Valley Coal carried out a large rotary drilling program (4496 metres) on a portion of the property referred to as Burnt Ridge North. Coal-bearing strata at this location are on the west

limb of the Alexander Creek syncline in the Elk Valley coalfield. If economic, resources on Burnt Ridge South and North will probably be accessed from, and contribute to, Line Creek Operations.

**Bare Mountain** and **Castle Mountain** (MINFILE 082JSE006 and 008) are south of Elk Valley Coal's Fording River Operations. Bare Mountain is on the east limb of the Alexander Creek syncline, while Castle Mountain (Figure 5.10) contains the synclinal axis and both limbs (although the exploration focus to date has been on the west limb). Elk Valley Coal carried out rotary drilling programs at both locations, for a combined total of 4858 metres.

Figure 5.10. View to the east of Castle Mountain from the Greenhills Mine, looking across the Fording River valley. Fording River Mine is off the left (north) edge of the photograph

The **Bingay Creek** coal property (MINFILE 082JSE011) is north of Elkford and west of the Greenhills syncline in the Elk Valley coalfield. Coal-bearing strata are contained in a tight, asymmetric syncline in close proximity to and east of the Bourgeau thrust fault. Hillsborough began evaluation of the property in 2004, and a second rotary drilling program was carried out in 2005 (1370 metres in 8 holes). Drilling was intended to upgrade and expand resource calculations of metallurgical coal. An application for a Small Mine permit was submitted and later withdrawn.

## WEST KOOTENAYS

In November 2005 a permit for a small mine was granted by the provincial government to FortyTwo Metals Inc, a wholly-owned subsidiary of Roca Mines Inc, for the MAX molybdenum project. The permit allows for development of an underground mine and onsite concentrator. Initial development will entail a "campaigned" 500 tonne per day operation, with total annual production of up to 72 000 tonnes.

The **MAX** property (MINFILE (082KNW003 and 004) is near the community of Trout Lake, south of Revelstoke, and used to be referred to as the Trout Lake molybdenum prospect. Extensive underground development (Figure 5.11) for advanced exploration occurred in the late 1970s and early 1980s. Recent work by Roca Mines Inc has included rehabilitation of underground workings and underground infill diamond drilling (3101 metres). A 2004 resource assessment calculated 1.01 million tonnes measured resources grading 1.01% $MoS_2$ at a cut-off grade of 0.50% $MoS_2$; this estimate was used in developing the 500-tonne-per-day mining scenario.

Metasediments of the Lower Cambrian to Middle Devonian Lardeau Group at the MAX property are intruded by the Cretaceous Trout Lake stock. The deposit is a pipe-like quartz vein stockwork that extends from surface to a depth of at least 1000 metres, in which molybdenite occurs mainly along margins of veins (source: Roca Mines report). The vein stockwork is best developed in close proximity the margins of the intrusive and its associated offshoots.

Figure 5.11. Portal at the MAX molybdenum property.

Sultan Minerals Inc has held the **Jersey-Emerald** property (MINFILE 082FSW009, 10, 11 and 218) near Salmo, which includes past producers of lead-zinc and tungsten, for more than ten years, but the exploration program in 2005 was the first focused on molybdenum. Molybdenum had been noted in mine records, and was known to occur in underground workings, historic drill core and surface showings. It appears to be closely associated with tungsten. Sultan carried out a 12-hole underground diamond drilling program (1445 metres), in order to test a 300 metre-long zone of molybdenum exposures seen in the East Dodger section of the Jersey-Emerald Tungsten mine. Molybdenum mineralization was found in all 12 drillholes. It typically occurs within a network of molybdenite-bearing quartz veins hosted within a Cretaceous granite body (source: Sultan Minerals news release). The best results were in drillhole 2, which contained 0.22% $MoS_2$ over its entire 58.5 metre length, and included a 1.1-metre interval near the bottom of the hole which assayed 5.19% $MoS_2$. The overall results suggest the molybdenum-rich zone extends approximately 300 metres in a north-south dimension, 120 metres east-west and to a depth of 90 metres; the zone remains open

to the north, south, west and at depth. A surface diamond drilling program was started late in the year.

Auramex Resource Corp carried out a diamond drilling program on its **Summit/Oldtimer** property (082FSW081 and 313) in the Ymir Camp. Gold in the Summit/Oldtimer property area is associated with quartz veins in close proximity to the contact between Ymir Group metasediments (Triassic and earlier) and intrusives of the Nelson Plutonic series (middle Jurassic). Veins in the Ymir camp trend northeasterly, and are described as being variably mineralized with auriferous pyrite, galena, sphalerite and chalcopyrite. Showings on the Summit/Oldtimer property are probably from one (or possibly more) vein(s) exposed over 3.8 km of strike length. The 2005 program (Figure 5.12) consisted of over 2300 metres of drilling in 24 holes. All of the drillholes intersected the Oldtimer mineralized structure over widths from 1.2 metres to 11.9 metres, with a central quartz vein core from 0.2 to 11.9 metres in thickness. The best mineralized sequences include 1.1 metres grading 5.76 g/t Au (drillhole 05-22), 1.0 metres grading 8.06 g/t Au (drillhole 05-05) and 2.8 metres grading 5.0 g/t (drillhole 05-07; source: Auramex news release).

Figure 5.12. Drilling on the Summit/Oldtimer property.

Klondike Gold Corporation, and a new related company, Klondike Silver Corporation, have been acquiring ground in the Sandon silver-lead-zinc camp, and carrying out exploration, over the past several years. Work in 2005 included soil geochemistry, diamond drilling (676 metres) and trenching on the **Wonderful** property (082FNW043), one of several past-producers on lands held by the company. The objective is to apply modern exploration techniques to geologically-favourable areas with deep overburden. Mineable mineralization would be run through the company's Silvana mill at Sandon town-site (Figure 5.13). The Wonderful occurrence is hosted by argillite and slate of the Slocan Group intruded by granodiorite and quartz monzonite dikes. Mineralization occurs in a sheared and mineralized fracture, with brecciated zones of galena, sphalerite and country rock with siderite (source Klondike Gold news release).

Figure 5.13. The Silvana mill in the Sandon Camp.

Columbia Yukon Explorations Inc carried out a trenching and diamond drilling program (571 metres total) on its **Gold Canyon** property near Burton. Gold and silver mineralization at this location is related to strongly altered (including skarn alteration) metasediments and metavolcanics of the Slocan Group, in close proximity to intrusive contacts. Massive sulphide mineralization appears to be in a skarn and/or replacement setting, and gold is correlated with pyrite, pyrrhotite and arsenopyrite. A newly discovered coincident geophysical and geochemical anomaly was the target in 2005. Significant drill intersections of anomalous gold and silver, in part corresponding to the geophysical anomalies, were noted (source Columbia Yukon news release).

## BOUNDARY DISTRICT

There were numerous mineral exploration programs in the Midway-Greenwood, Grand Forks and Rossland areas in 2005. The most significant (and only "major") program was Merit Mining Corp's geophysics and drilling (3195 metres) program on its gold-copper **Lexington** property (MINFILE 082ESE041 and 042). The Lexington property is part of the company's Greenwood Gold project. Recent work has focused on the Grenoble deposit (Figure 5.14), specifically on extending it to the southeast. Drilling in 2005 was successful in extending the deposit for 40 metres to 520 metres overall, and it remains open along strike in this direction.

The **Grenoble** deposit is hosted by an altered package of dacitic to andesitic tuffs. Mineralization, which is believed to have been emplaced during development of the Republic graben, is hosted by sub-parallel lenses of disseminated to narrow veins of pyrite, chalcopyrite and quartz (with or without native gold) within tuffs adjacent to a fault contact with serpentinite (source: Merit Mining Corp release). Current resources in the Grenoble deposit (based on 2004 drilling results) include 329 400 tonnes indicated with 8.3 g/t gold and 1.3% copper, at a cut-off grade of 6 g/t gold equivalent.

Merit Mining Corp has approval for removal of a 10 000-tonne bulk sample from the Grenoble deposit, as well as conditional approval to construct a 200-tonne per day concentrator, to process the sample, on the nearby Zip property. In late November, the company announced its intention to begin to assess the feasibility of developing the Greenwood Gold project to production, beginning with the exercising of its existing permits.

Figure 5.14. Grenoble portal on the Lexington property.

## OUTLOOK FOR 2006

There is much to look forward to in 2006 in the way of exploration and development in the Kootenays. The granting of a Small Mine permit in 2005 to Roca Mines' MAX molybdenum project means that the project could potentially be proceeding toward production in 2006. Merit Mining's Greenwood Gold Project could also potentially be advancing toward production.

The Rossland Camp will likely receive significant attention in 2006 from several companies, for both its molybdenum and gold potential. There should also be follow-up programs to some of the other 2005 molybdenum drilling projects in the region, including Sultan Minerals' Jersey-Emerald and Eagle Plains' Sphinx projects.

On the Sullivan (sedex) front, Stikine Gold's third drillhole on the Sullivan Deeps project, if it is drilled in 2006 as proposed, will be of significant importance. Similarly, any follow-up work on Klondike Gold's Pak or Panda projects will be observed with interest.

Activity in the East Kootenay coalfields will be at high level again. Highlights may include a Environmental Assessment application for Cline Mining' Lodgepole project.

At a more grass-roots level, follow-up and new programs by several junior exploration companies including Jasper Mining Corporation, Ruby Re Resources, Kootenay Gold Inc, Cream Minerals Ltd and Eagle Plains Resources Ltd, each of which holds several claim blocks and is actively pursuing various targets i the region, should add significantly to the level o exploration and our knowledge of the mineral potential b the end of 2006.

## ACKNOWLEDGMENTS

This report is made possible by the many exploratio and mine company staff and consultants who provid access to mines, exploration sites, drill-core and data, an who so generously share their information an knowledge.

# SOUTHWEST REGION

**By Jamie Pardy, PGeo**
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## SUMMARY AND TRENDS

The Southwest region hosts one metal mine, one coal mine and numerous industrial mineral and aggregate quarries and sand and gravel operations.

Exploration activity indicators for Southwest British Columbia are positive for 2005. The total exploration expenditures, number of major exploration projects started during the period and total metres of drilling are all up from the previous year (Figures 6.1 and 6.2). Exploration spending for 2005 is estimated to be $10.5 million, up significantly over the 2004 estimate of $4 million. Three 2005 projects had budgets greater than $1 million compared to only one project in 2004 and nine 2005 projects had budgets greater than $250 000 compared to only four in 2004.

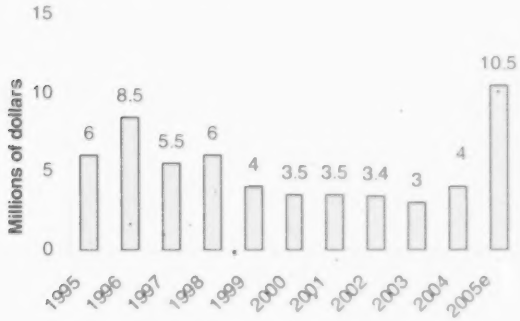


Figure 6.1. Annual exploration spending, in millions of dollars, Southwest British Columbia.

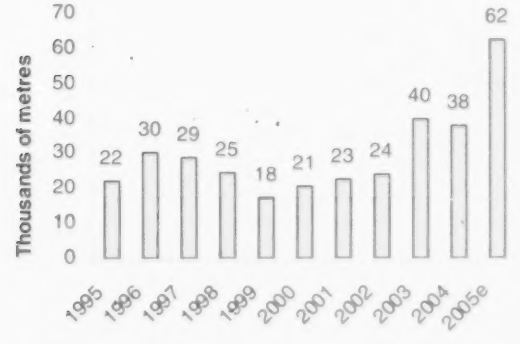


Figure 6.2. Annual exploration and development drilling, in thousands of metres, Southwest British Columbia.

Orca Sand and Gravel Ltd (Polaris Minerals Corp) received environmental certification and other authorizations including a mining permit to place its 4 to 6 million tonne per year **Orca** sand and gravel project near Port McNeil into production.

There are three projects in the Environmental Assessment pre-application stage: the Cogburn Magnesium project of North Pacific Alloys Limited (Leader Mining International Inc) with the company now looking for a project owner/operator, the Sechelt Carbonate project of Pan Pacific Aggregates Ltd that entered the preparatory stage in late November, and the Hills Bar Aggregate project of Qualark Resources Inc that entered December 2003.

## MINES AND QUARRIES SUMMARY

There are a variety of mines and quarries in southwestern British Columbia, including a number of industrial mineral mines, numerous aggregate operations, one metal and one coal mine (Figure 6.3 and Table 6.1).

The **Myra Falls** zinc-copper-gold-silver mine, in operation since 1966, has been owned and operated by NVI Mining Ltd (Breakwater Resources Ltd) since July 2004. It is estimated that just over 900 000 tonnes of ore will be milled by year's end, slightly less than the 1 million or more tonnes milled on average through the years 1995 to 2000. Designed mill capacity is 1.4 Mt/y.

Hillsborough Resources Ltd through its wholly owned subsidiary Quinsam Coal Corporation, increased production again in 2005 at its **Quinsam** underground thermal and PCI coal mine located west of Campbell River. The forecast 2005 production is about 760 000 tonnes of raw coal or 532 000 tonnes of clean coal, up 30% on the 410 000 tonnes produced in 2004.

Three large quarries on Texada Island, locale of significant western North America limestone production, will produce close to 6 million tonnes this year. During the year, the **Blubber Bay** quarry made a transition from a long-time chemical-grade and cement limestone producer to a smaller scale limestone aggregate and dolomitic limestone producer. The **Gillies Bay** quarry has increased cement limestone and aggregate rock production (Figure 6.4) and the **Vananda** quarry will again produce almost a quarter million tonnes of chemical-grade limestone in 2005.

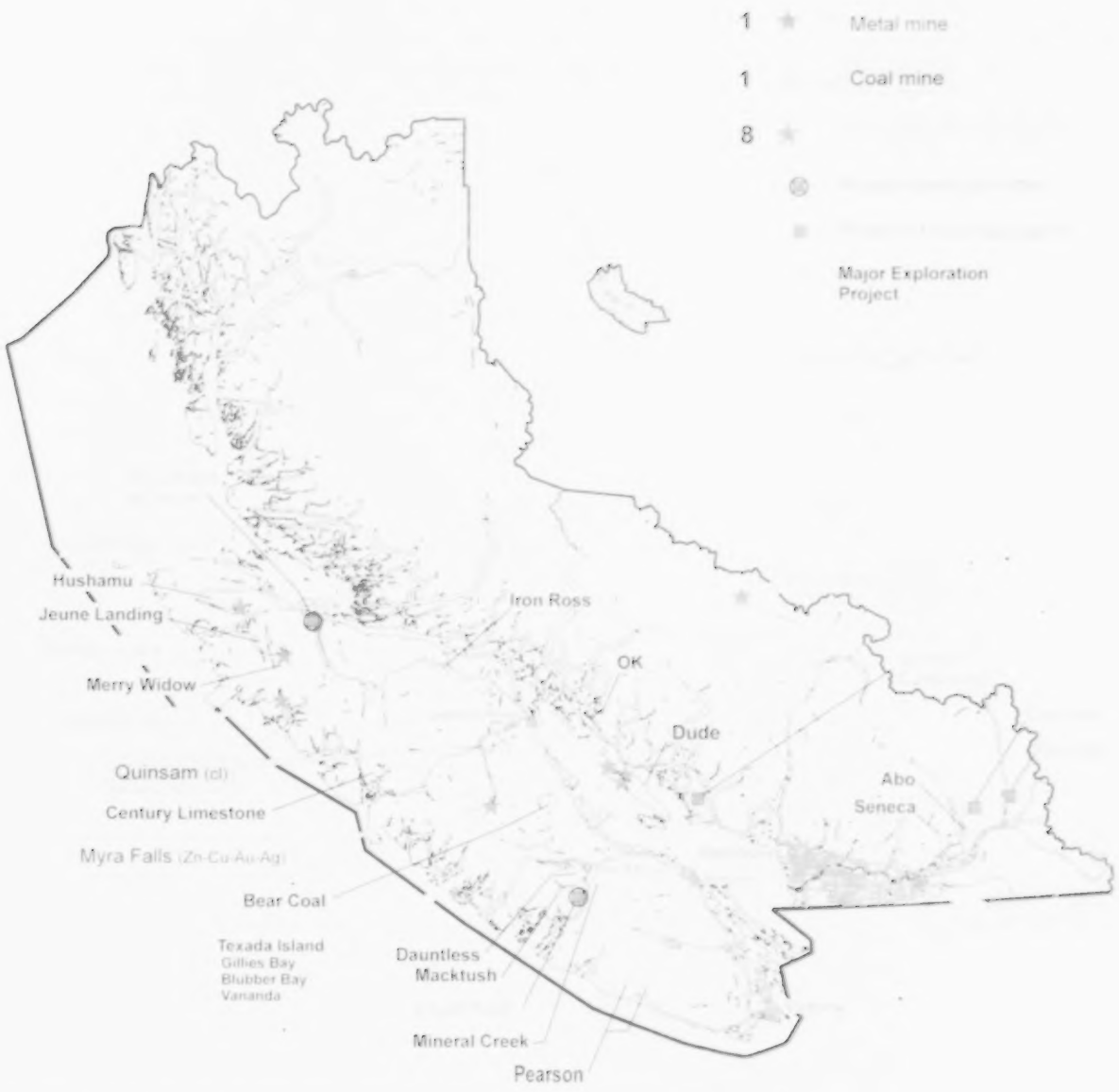


Figure 6.3: Mines, quarries and major exploration projects – Southwest British Columbia 2003

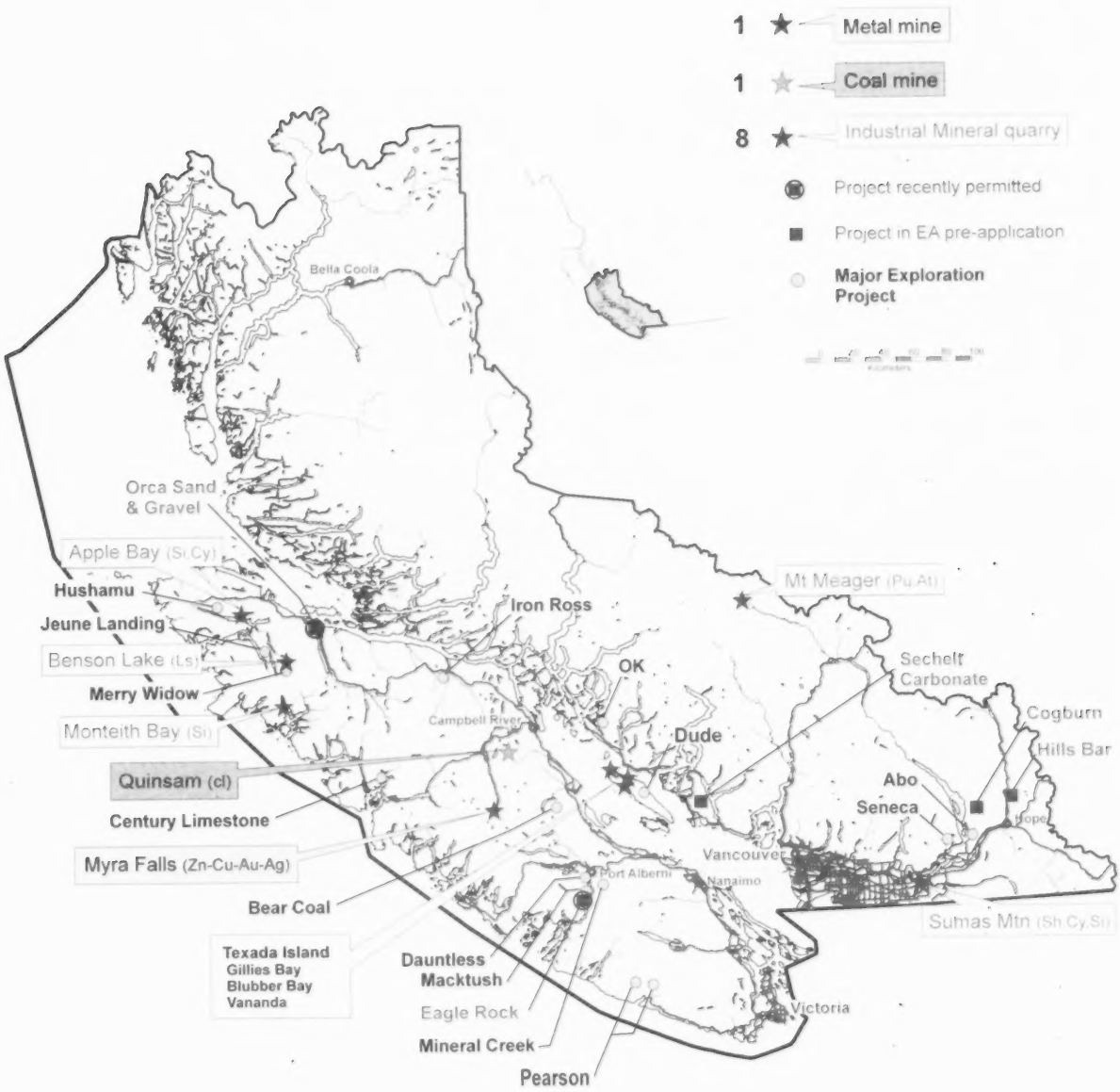


Figure 6.3. Mines, quarries and major exploration projects – Southwest British Columbia 2005.

## TABLE 6.1. MAJOR MINES AND QUARRIES – SOUTHWEST BRITISH COLUMBIA 2005

| Mine / Quarry<br>Operator | Location / community | Commodities | Forecast production in 2005 | Employment -person years | Reserves as of January 1, 2005 |
|---|---|---|---|---|---|
| **Myra Falls**<br>NVI Mining Ltd<br>(Breakwater Resources Ltd) | Campbell River | Zn-Cu-Au-Ag | 50 000 t Zn, 7900 t Cu, 974 kg Au, 36 400 kg Ag | ~400 | 6.392 Mt @ 6.7% Zn, 1.1% Cu, 1.4 g/t Au, 49 g/t Ag (M and I) |
| **Quinsam**<br>Quinsam Coal Corp<br>(Hillsborough Resources Ltd) | Campbell River | Thermal & PCI coal | 532 000 t clean coal | 85 | 11 years of production |
| **Apple Bay**<br>Electra Gold Ltd | Northern Van Island | Geyserite | 120 000 t | 6 | 5 million t |
| **Benson Lake**<br>Imasco Minerals Inc | Northwest Van Island | Limestone | 36 000 t | 3 | 100+ years |
| **Blubber Bay**<br>Ash Grove Cement Corp | Texada Island | Limestone aggregate, dolomitic lst | 580 000 t lst agg<br>40 000 t dol lst | 14 | |
| **Gillies Bay**<br>Texada Quarrying Ltd<br>(Lafarge Canada Inc) | Texada Island | Limestone, lst aggregate | 5+ million t | 72 | 100+ years |
| **Vananda**<br>Imperial Limestone Company Ltd | Texada Island | Limestone | 235 000 t | 8 | 50 years |
| **Monteith Bay**<br>Lehigh Northwest Cement Ltd | Northwest Van Island | Geyserite | 29 500 t | 2.25 | |
| **Mount Meager**<br>Great Pacific Pumice Ltd | Pemberton | Pumice | 10 000 cubic metres | 4 | 100+ years |
| **Sumas Mtn**<br>Clayburn Industries Ltd and cement manufacturer partners | Abbotsford | Clay, shale and sandstone | ~ 500 000 t | 10-20 | ~70 years |

Note: Blubber Bay and Gillies Bay produce limestone for industrial mineral applications and aggregates - other large aggregate only operations are not included in this table.

## TABLE 6.2. MAJOR EXPLORATION PROJECTS – SOUTHWEST BRITISH COLUMBIA 2005

| Property | Operator | Minfile (NTS) | Commodity | Deposit Type | Program | Electoral Region |
|---|---|---|---|---|---|---|
| Abo | Eagle Plains Resources Ltd | 095HSW092 | Au-Ag-Zn-Cu | Vein | DD(3068m) | Chilliwack-Kent |
| Bear Coal | Compliance Energy Corp | 092F 313 | Coal | Sedimentary | G, TR, RD;DD(1550m, 33 holes) | Comox Valley |
| Century Limestone | Doublestar Resources Ltd | (92E/10E) | limestone | IM | GC, MAG, DD(3000m planned) | North Island |
| Dauntless | SYMC Resources Ltd | 092F 168 | Cu-Ag | Vein | DD(1062m, 15 holes); TR(400m 15); A(2.5km) | Alberni-Qualicum |
| Dude | Pathfinder Resources Ltd | 092F 276 | Cu+Mo+Au | Porphyry | GC, RC(1270m, 5 holes) | Powell River - Sunshine Coast |
| Hushamu | Lumina Resource Corp | 092L 240 | Cu-Au-Mo+Ag | Porphyry | AB-MG,EM(2600 line km); P, G, GC, DD(4600m, 22 holes) | North Island |
| Iron Ross | Homegold Resources Ltd | 092K 043 | Magnetite | IM | DD(250m, 2 holes); BU (4800 tonnes) | North Island |
| Jeune Landing | Sechelt Industrial Minerals Corp | (92L/06) | Dolomite | IM | DD(300m, 7 holes), A(150m); hydrographic survey | North Island |
| Macktush | SYMC Resources Ltd | 092F 012 | Au-Ag-Cu+Mo | Porphyry, Vein | DD(1500; 20 holes), A(1.4km) | Alberni-Qualicum |
| Merry Widow | Grande Portage Resources Ltd | 092L 044 | Au-Ag+Cu+Co | Skarn | IP(55 line km) | North Island |
| Mineral Creek | Bitterroot Resources Ltd | 092F 079, 331 | Au-Ag+ | Vein | DD(2000m, 15 holes) | Alberni-Qualicum |
| Myra Falls mine | NVI Mining Ltd (Breakwater Resources Ltd) | 92F 330, 071, 072, 073 | Cu-Zn-Au-Ag-Pb | VMS | DD(36 000); UG(800m) | North Island |
| OK Copper-Moly | Goldrush Resources Ltd | 092K 008, 057, 155 | Cu-Mo | Porphyry | DD(968m, 6 holes) | Powell River - Sunshine Coast |
| Quinsam Coal mine | Quinsam Coal Corp (Hillsborough Resources Ltd) | 092F 319 | Thermal coal | Sedimentary | RD (1200m, 6 holes) | North Island |
| Pearson (Bugaboo, Reko) | Emerald Fields Resource Corp | 092C-022, 191 | PGE, Ni, Cu | Mag, skarn | AB-GP; DD (460m, 3 holes at Bugaboo); DD (300m, 4 holes at Reko) | Malahat-Juan de Fuca |
| Sechelt Carbonate | Pan Pacific Aggregates Ltd | 092GNW031, 052 | Dolomite and other | IM | A (3.1 km road); DD(5-6000m, 32 holes) | Powell River - Sunshine Coast |
| Seneca | Carat Exploration Inc | 092HSW013, 039, 165 | Zn-Cu-Pb-Ag-Au | VMS | G, P, GC, IP;EM(25 line km); AB-EM(325 line km); DD(3700m) | Maple Ridge-Mission |

A = access; trail, road construction on claims; AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; BU (X tonnes) = bulk sample (weight in tonnes); DD (Xm) = diamond drilling totaling X metres; EN = environmental baseline studies/monitoring, remediation work; G = geology, mapping, etc; GC = geochemical sampling (rock, soil, silt, etc); GP = geophysics (general); EM = electromagnetics; IP = induced polarization; 3D-IP; MG = magnetics; MS = metallurgical studies; P = prospecting; TR = trenching; UG (X m) = X metres of underground development; UT = UTEM

Figure 6.4. Gillies Bay quarry aggregate crushing plant and a stockpile of overseas bound coal from the Quinsam Coal mine.

Clay from the **Sumas Mountain** clay, shale and sandstone quarry located about 8 km east of Abbotsford, is utilized in the manufacture of brick and other clay products at Clayburn Industries Ltd, and shale and sandstone by cement manufacturers (Figure 6.5). In July 2005 the company and two community associations celebrated 100 years of clay and brick production in the Abbotsford area.

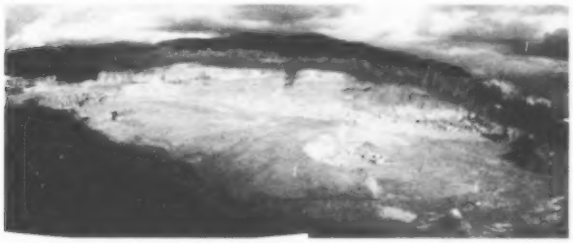

Figure 6.5. Clay, shale and sandstone is quarried at the Sumas Mountain operation of Clayburn Industries Ltd and partners.

The local demand for aggregate remained strong again this year reflecting the continuing construction boom in the province. Nineteen large aggregate quarries and pits in the Lower Mainland and coastal area produced about 17 million tonnes in total in 2005 - these operations with approximate 2005 production are: **Cox Station** on the south side of the Fraser River at Sumas Mountain - 2 million tonnes; three other crushed aggregate quarries on **Sumas Mountain** – 1.73 million tonnes combined; **Central Aggregates Mission** sand and gravel pit - 0.45 million tonnes; **Allard Mission** pit - about 0.2 million tonnes; **Central Aggregates Vedder Mountain** operation - 0.20 million tonnes; four large natural sand and gravel pits in the **Bradner Road** area located west of the Abbotsford airport – 2.4 million tonnes combined; **Pitt River** crushed aggregate quarry - 0.95 million tonnes; **Allard Pipeline Road** pit in the Coquitlam River valley - about 0.4 million tonnes; **Cewe Pipeline Road** pit in the Coquitlam River valley – about 0.9 million tonnes; **Central Aggregates Pipeline Road** pit - 0.45 million tonnes; **Earls Cove** pit on the Sunshine Coast - 1.4 million tonnes; **Sechelt** pit on the Sunshine coast – 5.2 million tonnes; **Blubber Bay** quarry on Texada Island – 0.4 million tonnes; and **Gillies Bay** quarry on Texada - 0.5-1.5 million tonnes in 2005.

## MINES AND QUARRIES

### *Metals*

At the **Myra Falls** zinc-copper-gold-silver mine approximately 25 million tonnes of massive sulphide copper-zinc-gold-silver ore has been mined over the past 29 years from several orebodies within the known 6-kilometre deposit trend. Ore mined to date has averaged 5.0% zinc, 1.8% copper, 2 g/t gold and 52 g/t silver.

In nine months ending September 30 of this year, the company reported 685 694 tonnes of ore were milled, producing 37 493 tonnes of zinc, 5942 tonnes of copper, 23 490 ounces of gold and 878 502 ounces of silver. This actual production equates to a forecast 2005 figure of about 914 000 tonnes ore milled and 50 000 tonnes of zinc, 7900 tonnes of copper, 974 kg of gold and 36 400 kg of silver. Myra Falls continues to employ approximately 400 people.

Proven and probable reserves are 6.392 Mt at 6.7% Zn, 1.1% Cu, 1.4 g/t Au and 49 g/t Ag.

Breakwater Resources Ltd also reports that since its acquisition of the mine last year, it continues to work on mine design and planning and on improving materials handling as well as metallurgical improvements in the mill. The company is increasing its tailings storage capacity to provide sufficient storage to 2017. Work on a new lead flash flotation test cell is proceeding, and if successful, should result in lead concentrate of marketable quality and in higher-grade copper concentrates with less penalty lead and zinc. A gold shaking table is also to be installed late this year to allow for the production of gold dore, thus eliminating some of the higher cost smelter recovery of gold.

Work began on the Lynx ramp designed to provide access to untested parts of the deposit trend(s) and to provide secondary access for equipment and improve ventilation and safety. The ramp will access areas west of the Marshall trend, between the Battle-Gap zones and old Lynx mine, and north of the Ridge zones. This will facilitate drilling planned for 2006 in the area between the Battle-Gap zones and old Lynx mine.

A large underground drilling program was underway in 2005 to expand the polymetallic massive sulphide reserves near mining areas and to identify new resources in a frontier trend. About 36 000 metres of core drilling was to be completed by year's end to test the Extension zone west of the Battle-Gap zone and to test for extensions of the 43 Block and HW zone, and along the Marshall trend where significant potential for additional ore has been identified with previous drilling. Eight hundred metres of new underground development was completed across the Marshall trend in 2005 to provide

for drill stations closer to targets. Drill intersections to date on the Marshall trend include 26.5 metres at 10.1% zinc, 1.3% copper, 3.6 g/t gold and 234 g/t silver; and 33.5% zinc, 2.0% copper, 8.4 g/t gold and 221 g/t silver over 8.8 metres.

## *Coal*

Hillsborough Resources Ltd has increased production more than 50% at the mine over 2 years. The forecast 2005 production is about 760 000 tonnes of raw coal or 532 000 tonnes of clean coal, up 30% on the 410 000 tonnes mined in 2004 and up 56% from the 340 000 tonnes extracted in 2003. The mine has expanded its workforce to 85 workers to achieve the increased output. A contractor transports the coal 25 km from the mine to its Middle Point barge loading facility at Campbell River. The coal is shipped directly to North American customers from the Middle Point facility or transferred to a ship loading facility on Texada Island (the loading facility at the Gillies Bay quarry of Texada Quarrying Ltd - Lafarge Canada Inc) for shipment to overseas customers in Chile and Japan.

In 2005, the company started on a long-term exploration strategy to significantly increase resources and reserves to expand the Quinsam Coal mine life beyond the current 11 years. About 1200 metres of exploratory drilling was planned for 2005 to support detailed mine planning, further test the Quinsam North area and test for coal quality and thickness trends in the Quinsam East area.

## *Industrial Minerals*

### Limestone / Dolomitic Limestone / Aggregate

Triassic Quatsino Formation limestone is a significant resource on **Texada Island** for the three quarries, Gillies Bay, Blubber Bay and Vananda. Texada Quarrying Ltd (Lafarge Canada Inc) operates the **Gillies Bay** limestone and aggregate quarry, Ash Grove Cement Corporation operates the **Blubber Bay** limestone aggregate/dolomitic limestone quarry and Imperial Limestone Company Ltd operates the **Vananda** limestone quarry.

As of early 2005 the **Blubber Bay** quarry of Ash Grove Cement Corporation produced limestone aggregates and dolomitic limestone (a newly developed product for the agricultural market in Oregon), and ceased production of cement and chemical-grade limestone that were the mainstays of the operation since the 1880s (Figure 6.6). The company expects to produce about 580 000 tonnes of limestone aggregates for marketing through Ross West Distributors in Vancouver, and 30 000 or 40 000 tonnes of dolomitic limestone (16.75% MgO or better). High MgO content in parts of the dolomitic limestone pit may allow future marketing as a higher value plastic filler.

Located on the west side of the island, the **Gillies Bay** quarry of Texada Quarrying Ltd (Lafarge Canada Inc) is the largest of the three Texada Island quarries. It is expected to produce 5+ million tonnes in 2005 consisting of: 3 million tonnes of cement limestone; 0.6 million tonnes of chemical-grade limestone; 0.5 to 1.5 million tonnes of crushed aggregate (limestone, volcanic and granitic rock) and rip-rap; and, 40-50 000 tonnes of high brightness white limestone. Approximately 6 million tonnes will be quarried with up to 1 million tonnes stockpiled depending upon final contracts.

Figure 6.6. Between 1965 and 2005 approximately 100 million tonnes of limestone was produced from Pit #6 at the Blubber Bay quarry on Texada Island.

The aggregate resource is a combination of limestone and volcanic material from stockpiles of past producing copper, iron mines that lie within the Gillies Bay property (primarily MINFILE 092F 106 Prescott-Texada Mines), and newly quarried limestone, volcanic rock and granitic rock. Product is blended as per customer requirements.

A new aggregate plant with a designed capacity of 1.5 million tonnes per year feeds a barge and ship loader that is currently being expanded to 400 tonne/hour. In addition a new limestone crushing plant (cement and chemical-grade) feeds a second loader with 2500 tonne/hour capacity. Five thousand to 12 000 tonne barges are utilized. Riprap is loaded on barges with a ramp.

Approximately half of the Gillies Bay limestone production is marketed in Canada and half in the US to cement and lime manufactures. The aggregate market includes marine works contracts and starting in August 2005, the Lower Mainland area.

At its **Vananda** quarry, Imperial Limestone Company Ltd estimates that about 235 000 tonnes of chemical-grade limestone will be extracted and marketed for use in the Seattle building market in 2005, the same amount as in 2004.

The forecast 2005 production of approximately 36 000 tonnes of high brightness limestone at Imasco Minerals Inc's **Benson Lake** quarry near Port Alice is also approximately the same as last year. The pulverized limestone product is used primarily as a filler / extender in manufacture of paints, PVC, rubber products, paper, glass and ceramic glaze.

**Aggregate**

Aggregates are crushed stone and natural materials including sand, sand and gravel, and a variety of sizes of crushed product. Sand and gravel pits may produce as much 25% crushed product from the oversize material of a sand and gravel deposit in addition to natural sand and gravel products. Crushed stone quarries manufacture products from mostly granitic, volcanic and limestone rock types.

Production in 2005 at the **Cox Station** crushed stone quarry of Mainland Sand & Gravel Ltd located along the south side of the Fraser River at the base of Sumas Mountain, is expected to match or better last year's figure of 1.97 million tonnes (Figure 6.7). It is one of the top ten aggregate producers in Canada.

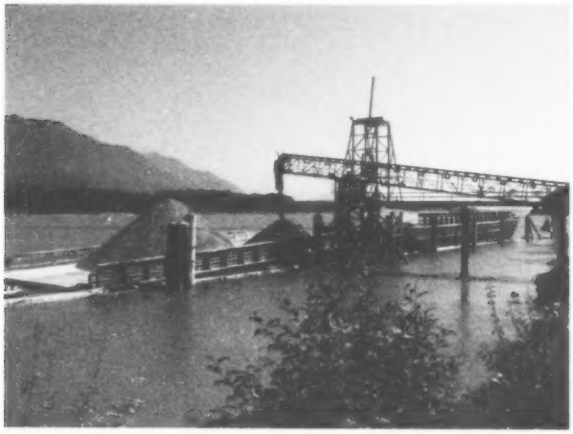

Figure 6.7. 1600 and 3100 tonne barges are loaded with aggregate at the Cox Station quarry of Mainland Sand & Gravel Ltd, located on the south side of the Fraser River at Sumas Mountain, central Fraser Valley.

Mainland has produced about 15 million tonnes at Cox since 1985 and has 2-3 years of reserves left in its original pit and about 200 million tonnes of granitic rock in its newly developed East pit area. About 25 people work at the operation. Ninety-five per cent of product is shipped by 1600 and 3100 tonne barges down river to company depots and customers in the Vancouver area, 4% is trucked and 1% is shipped by rail that passes through the property.

The company acquired the used crusher from the closed Similco mine operation this year and plans to install it over the next year. Mainland S&G is partnered with two other crushed aggregate operations located on Sumas Mountain and also distributes aggregate products from the Blubber Bay quarry on Texada Island through the Lower Mainland-based Ross West Distributors.

There are three other operating crushed aggregate quarries on **Sumas Mountain** that will produce a combined 1.73 million tonnes in 2005: the **Highland** quarry of Highland quarries Ltd will produce an estimated 410 000 tonnes; the **Summit** quarry operated through Lafarge Canada Inc, will crush and sell about 520 000 tonnes this year; and the **Western Rock** quarry of Western Rock Products will produce about 800 000 tonnes and sell products through Mainland Sand & Gravel Ltd. The **Jamieson** crushed aggregate quarry also located on Sumas Mountain, was operated by Mainland Sand & Gravel Ltd until the spring of this year.

In the **Bradner Road** area west of the Abbotsford airport, four separate operations produce natural sand and gravel and crushed stone products from a local resource that is estimated by the Aggregate Producers Association of BC to be a six-year supply. The operations of Central Aggregates Ltd (Lafarge Canada Inc), Fraser Valley Aggregates Ltd, Imperial Paving Ltd and West Coast Aggregates Ltd will produce in 2005 a total of about 2.4 million tonnes.

Within the confirms of one of the Bradner Road pits is a processing plant of Target Products Ltd that generates a variety of sand products. Just a few km north of the active operations is a good example of reclamation and post-mining use of aggregate land where a previously producing pit has been transformed into a vineyard. Agricultural use of old pit land is common in the Fraser Valley (Figure 6.8).

The **Pitt River** crushed stone quarry of Pitt River Quarries Ltd (Lafarge Canada Inc) is located on the east side of the Pitt River just south of Pitt Lake. About 20 million tonnes has been produced since 1968. Operations were intermittent from 1968 to 1989 and continuous since then. Granodiorite is crushed primarily for aggregates for use as road base and in asphalt applications. Riprap and other coarse construction and drainage/armouring products are also marketed. Approximate production for each of 2004 and 2005 is about 950 000 tonnes. Product is shipped by barge and truck. Twenty to twenty-five people are currently employed. The company plans to move forward with a southerly extension of the existing pit with development of a 39 million tonne resource.

Allard Contractors Ltd have four operations producing natural and crushed stone aggregates in pits in Maple Ridge, Mission, Coquitlam and Victoria and employ about 80 to 90 people in total. The Allard **Pipeline Road** sand and gravel pit is the largest Allard operation and is one of the three pits in the Coquitlam River valley that produce from the 150 ft thick 'main seam gravels' and from mixed sand, gravel and glacial till. The Allard Pipeline Road pit has resources reported to be sufficient for 20 years of production. The other two operations are the 0.9 million tonne per year **Cewe Pipeline Road** pit owned by Jack Cewe Ltd and the 0.45 million tonne per year **Central Aggregates Pipeline Road** pit of Central Aggregates Ltd (Lafarge Canada Inc).

Figure 6.8. Lotusland Vineyards is an example of agricultural use of reclaimed aggregate land in the central Fraser Valley.

Reclamation and post mining use of past producing sand and gravel pits in the Coquitlam area provide good examples of productive resource and end land use. A local high school and a Douglas College campus now occupy past producing Allard pits and current land uses of other reclaimed pits include Coquitlam's Town Centre Park and Lafarge Lake.

Located on the Sunshine coast at Sechelt is another one of the top ten aggregate producers in Canada – the **Sechelt** sand and gravel pit of Construction Aggregates Ltd (Lehigh Northwest Materials Ltd). Forecast production for 2005 is expected to be about the same as last year at 5.2 million tonnes of natural and crushed aggregates. The mine is located immediately adjacent to the developed town site of Sechelt, but mostly hidden from view with large buffer berms with grass and tree growth. The mine and plant is located on a combination of Sechelt Indian Band land, private land and Crown land.

The property has an impressive resource up to 150 ft thick, covered by only 1 to 10-15 ft of overburden, that is estimated to be about 250 million tonnes and sufficient for production to 2035. Some of the five percent of the material that might normally be waste at the extraction point is used at the neighbouring municipal land fill site as cover and the small fraction of waste silt from the processing plant (another 5%) is stored in an old pit area on the west side of the property. About 25% of total production is crushed product from over-size pit material. Products are fill materials, road bases, crushed rock and washed aggregates. Sixty-five unionized workers and about 12 staff are employed. Three 70-tonne and four 50-tonne trucks are used. Twenty-two km of conveyor move material within the mine site and to the barge / ship loading facility that loads 1800 to 5000 tonne barges and 35 000 tonne and 70 000 tonne ships. Markets include Vancouver, California, Alaska and Washington State. About half of the annual production goes to the local and Lower Mainland markets and half to markets in the United States.

Progressive reclamation and sustainable operations at the site are demonstrated by retention of a waterfowl pond adjacent to one of the reclamation areas that has a good growth poplars that are designed to be harvested for fibre for local pulp mills. Biosolids from the City of Vancouver as used to promote vegetation growth on reclamation areas. The use of an old pit area for tailings storage also reduces the total footprint of the operation.

Orca Sand & Gravel Ltd (Polaris Minerals Corp) received environmental certification and other authorizations including a mining permit to place its 4 to 6 million tonne per year **Orca** sand and gravel project into production. The project is located about 3.5 km west of Port McNeil on Vancouver Island. The 127 million tonne sand and gravel deposit covers an area approximately 3000 by 800 metres with 1 to 3 metres of overburden. A conveyor is proposed to move material approximately 1.7 km to a barge and ship load out facility (Figure 6.9). The project is designed for export of the natural aggregate gravel and sand products to North American markets, particularly California. The Namgis First Nation is a partner with Orca Sand & Gravel Ltd.

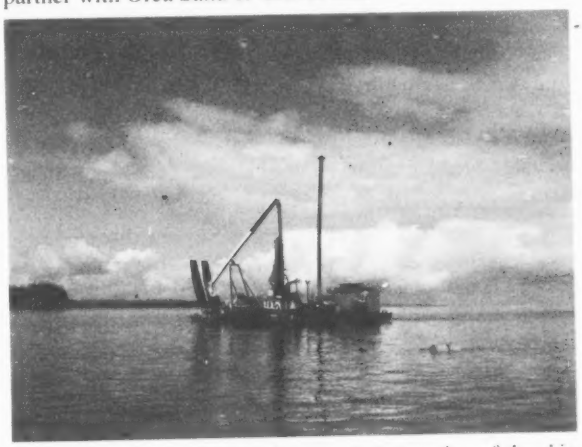

Figure 6.9. Marine drill rig for geotechnical testing of the ship loading facility site of the newly certified and permitted Orca Sand and Gravel project near Port McNeill.

The **Hills Bar Aggregate** project of Qualark Resources Inc is in the pre-application stage of Provincial Environmental Assessment, however little progress on the project has been made since 2003.

**Silica-alumina and Silica Rock**

Silica-alumina and silica rock is used in cement making. At the **Apple Bay** quarry located west of Port Hardy on Vancouver Island, Electra Gold Ltd completed its second year of operation with production of about 120 000 tonnes of geyserite in 2005. The operation employs about 6 workers.

In 2005 Lehigh Northwest Cement Limited produced 29 500 tonnes from its quarry at **Monteith Bay** (geyserite as a silica-alumina product) on western Vancouver Island. This operation was inactive the previous year.

**Clay, Shale and Sandstone**

Production of shale, clay and sandstone continued at the **Sumas Mountain** quarry located about 8 km east of

Abbotsford. Clay is utilized in the manufacture of brick and other clay products at the Clayburn Industries Ltd plant located near old downtown Abbotsford. The plant makes about 8 to 12 million bricks per year including face brick and more valuable refractory brick used in industrial applications and fireboxes.

Clayburn Industries uses about 35 000 tonnes annually of the 500 000 tonnes of clay, shale and sandstone that are quarried each year. The remainder of production is used by Lehigh Northwest Materials Ltd and Lafarge Canada Inc as silica-alumina in the making of cement in the Lower Mainland and in Kamloops. The mineral resource of this quarry is currently well utilized, however with high land values in the Fraser Valley actual quarry life may be shorter than the estimated 70 years of resource.

Sumas Clay Products Ltd, a Sumas First Nation company, owns and operates a small clay quarry and the historic **Kilgard** brick and clay product plant located on reserve land on the south side of Sumas Mountain. This plant was constructed in 1912 just after the first Clayburn plant on the north side of Sumas Mountain in 1905. The Indian Reserve borders the south boundary of the Sumas Mountain clay, shale and sandstone quarry. The Kilgard plant produces a line of products for a small regular clientele located in the western United States and Japan, as well as custom order specialty brick and clay products.

Ironwood Clay Company Inc mines cosmetic/medical clay seasonally as needed from its **De Cosmos Lagoon** on Hunter Island located west of Bella Coola. For 2005 the company reported no production for the second consecutive year. Ironwood relied on its inventory of 850 tonnes extracted in 2003 to make marketable products. Production at the Hunter Island locality is next planned for June 2006.

Carrie Cove Cosmetics Inc also markets clay for cosmetic/medical application, primarily to the international health spa industry. The company uses a mined inventory of approximately 1200 tonnes from its **Carrie Cove** site in the Comox Valley.

**Dimension Stone / Construction Rock**

Local stone processing plants continue to cut much more imported stone than locally quarried stone to meet demand for currently popular dark and orange-brown coloured products. Margranite Industries Ltd of Surrey planned to produce a small amount of 'Robson Rose' granite from its **Skagit Valley** quarry in 2005. The other southwest region quarry owned by the large Surrey manufacturer, East Anderson River, has been inactive for several years.

Huckleberry Stone Supply Ltd of Burnaby produced basalt, primarily for application in landscape wall construction and as facing stone, from five small quarries in the Whistler and Squamish areas. Total 2005 production from its **Spumoni, Cabin, Freeman, Rubble and Huckleberry** quarries (MINFILE 092GNW100 and others) amounted to about the same as last year's output of 11 000 tonnes. Mountain High Properties Ltd produced an undetermined amount of stone from its **Spike** basalt and **Gunsight** phyllite quarries in the Whistler area.

Matrix Marble and Stone Corporation processes imported and domestic stones at its plant near Duncan, and extracts marble from two quarries on Vancouver Island for marketing to the high-end building industry (Figure 6.10). In 2005, the company quarried approximately the same amount as in the previous year, about 200 tonnes of 'Black Carmanah' marble from its **Gordon River** site (MINFILE 092C 086) and about 300 tonnes total of 'Island White' and 'Tlupan' Blue' marbles from its **Hisnet Inlet** (MINFILE 092E 020) quarry.

Figure 6.10. Matrix Marble and Stone Corporation quarries and manufactures marble products - this large kitchen sink is milled from its 'Island White' marble.

Hardy Island Granite Quarries Ltd doubled production of the classic light grey granodiorite from its **Hardy Island** quarry (MINFILE 092F 425) on the sunshine coast to about 5000 tonnes in 2005 from 2600 tonnes the previous year. Approximately 600 tonnes of fine-grained andesite was removed from the **Haddington Island** quarry (MINFILE 092L 146) located at Port McNeill. Both of these sites are known as the source of dimension stone utilized in the construction of historic buildings in the province.

The material from the Hardy and Haddington quarries is transported to Bedrock Granite Sales Ltd's stone cutting facility in Coquitlam for processing. End products are primarily used as facing and landscape materials including wall facing, caps and stones and landscape steps and pavers.

Also in the Port Renfrew area, San Juan Quarries, owned by Industrial Stone Supply Ltd of Nanaimo, produced from its **Melanie** slate quarry. This material is marketed primarily on Vancouver Island as patio stone.

**Pumice**

Great Pacific Pumice Ltd produced about 10 000 cubic metres of pumice in 2005, compared to 14 000 last year, from its **Mount Meager** site north of Pemberton. Labour shortages have challenged the company's ability

to meet market demand for its product which is reported to be about 20 000 cubic metres for the year.

## EXPLORATION TRENDS

By year end 2005, seventeen major exploration projects had started compared to twelve major projects for the region in 2004. There were 16 drilling projects for a total amount of about 62 000 metres, up considerably over the final 2004 estimate of 38 000 metres (Figure 6.2). Again this year the amount of drilling at the Myra Falls operation (36 000 m) accounts for a good portion of total metres drilled. The region's major exploration projects are shown in Figure 6.3 and are listed in Table 6.2.

### *North Island*

Lumina Resources Corp consolidated 37 000 hectares of tenure in the North Island copper-gold belt host to the Island Copper mine that produced over 365 million tonnes of ore and 1.2 million tonnes of copper, 32 009 tonnes of molybdenum, 35.5 tonnes of gold, 295.5 tonnes of silver plus rhenium over its 25-year life. Lumina's ground includes the 231 million tonne **Hushamu** deposit grading 0.28% copper and 0.31g/t gold. The company's Hushamu project was started with 2600 line-kilometres of airborne electromagnetic and magnetic geophysical survey, ground-based geophysics and geological and soil geochemistry surveys to help identify additional copper-molybdenum-gold porphyry drill-targets. A first phase of drilling completed in August tested priority targets at Hushamu and the Northwest Expo occurrence. At the time of writing, a second phase of drilling was underway in two main target areas. Total planned drilling was 4600 metres in 22 holes.

The **Jeune Landing** project of Sechelt Industrial Minerals Corp is a dolomite prospect located immediately north of the Village of Port Alice. Exposed near tidewater on Neroutsos Inlet, the 30-metre wide bed of dolomite in the Middle to Upper Triassic Quatsino Formation has returned MgO values of 22.5%. The company drilled 300 metres in 7 holes as a preliminary test and plans a 10 000 tonne bulk sample in late 2005 for testing for use in a Washington state glass-making plant. A hydrographic survey was also completed during the year to facilitate construction of a barge load out. If the bulk sample meets specifications for glass making, Sechelt Industrial Minerals Corp could initially produce as much as 50 000 tonnes per year from a seasonal quarry operation.

Vancouver-based, junior Grande Portage Resources Ltd optioned the **Merry Widow** and surrounding occurrences (MINFILE 092L 044, 045, 046) located 40 km southwest of Port McNeil on Vancouver Island was optioned by in 2004. In late November the company started a 55 line-km IP geophysical survey with a large gold-enriched skarn as the exploration target. The Merry Widow, an iron skarn, and associated deposits produced almost 1.7 billion kilograms of iron in the 1950s and 1960s. The nearby Old Sport (MINFILE 092L 035) mine, a precious metal-bearing copper skarn, produced 506 million kilograms of iron, 41 million kilograms of copper and 3.84 million grams of gold and 11.7 million grams of silver.

Newmex Minerals Inc completed preliminary work on known gold-bearing veins in the **Zeballos** area (MINFILE 092L 008, 010).

In the Sayward area, Homegold Resources Ltd worked the **Iron Ross** iron skarn magnetite deposit (MINFILE 092K 043). Two core drillholes totaling 250 metres were completed and a 4800 tonne bulk sample was taken for use as heavy media in a heavy concrete application in a hospital x-ray facility.

Also in the Sayward area, Lehigh Northwest Materials Ltd worked its **Sayward** project with exploration of a limestone body with 9.5 line-km of seismic survey.

In the Menekay River area located between Campbell River and Sayward, Merit Mining Corp completed further trenching on the new **Virosa** copper-silver discovery made in late 2004 where a grab sample returned 8.7% copper and 46 g/t silver.

### *Campbell River / Gold River*

Operator of the Basin Coal mine near Princeton, Compliance Energy Corp. initiated its **Bear Coal** project in the historic Cumberland coalfield in the Hamilton Lake area. The property's known coal deposit (MINFILE 092F 313) has a historic resource of approximately 11 million tonnes. The Bear Coal project was designed to upgrade the historic resource estimates of 8.5 million tonnes (Block A) and 2.6 million tonnes (Block B) and test for additional resources. Coal from both blocks is reported to have good coking characteristics and to be marketable as metallurgical coal.

Trenching and a 1550 metre, 33 hole drilling program was completed by summer's end on Block A, B and the newly discovered Block E.

Infill and extension drilling conducted at Block B has outlined coal that the company plans to bulk sample in early 2006. In addition, a coal section identified through trenching and drilling in an area about 2 km northeast of Block B, called Block E, is now interpreted to be an extension of one of the Block B coal seams. Block E is one of the two new areas of coal bearing strata discovered on the property in 2005. The company is expecting completion of a 43-101 resource estimate and report before year-end and is also conducting washability tests on the coal to test its suitability for the metallurgical coal market.

In late October Compliance Energy announced that it had entered into an option agreement to acquire all the coal, mineral, coal bed methane and natural gas rights in package of land near the Bear Coal project, the newly acquired tenure includes the **Fox Coal** deposit that has a

historic resource estimate of 38 477 900 tonnes of combined reserves coal (MINFILE 092F 333). The company plans to explore its Bear Coal and Fox Coal properties in 2006.

At the **Myra Falls** zinc-copper-gold-silver mine of NVI Mining Ltd, a large underground drilling program was underway in 2005 to expand the polymetallic massive sulphide reserves near mining areas and to identify new resources in a frontier trend. About 36 000 metres of core drilling is likely to be completed by year's end to test the Extension zone west of the Battle-Gap zone and to test for extensions of the 43 Block and HW zone, and along the Marshall trend where significant potential for additional ore has been identified with previous drilling. Eight hundred metres of new underground development was completed across the Marshall trend in 2005 to provide for drill stations closer to targets. Drill intersections to date on the Marshall trend include 19.6 metres at 11.7% zinc, 0.8% copper, 0/7 g/t gold and 45.9 g/t silver; 26.5 metres at 10.1% zinc, 1.3% copper, 3.6 g/t gold and 234 g/t silver; and 33.5% zinc, 2.0% copper, 8.4 g/t gold and 221 g/t silver over 8.8 metres.

In addition, work began on the Lynx ramp designed to provide access to untested areas with little or no previous drilling and to provide secondary access for equipment and improve ventilation and safety. The ramp will provide access to areas west of the Marshall trend, between the Battle-Gap zones and old Lynx mine, and north of the Ridge zones. This major development will facilitate drilling planned for 2006 in the area between the Battle-Gap zones and old Lynx mine.

Located between Gold River and Tahsis on the west side of Tlupana Inlet, is Doublestar Resources Ltd's **Century Limestone** project. The property includes an existing log load out that might easily be adapted for use as a barge loading facility. Preliminary grid rock sampling completed mid-2005 confirmed the continuity and quality of the Quatsino Formation limestone for calcining to a lime product. For late 2005, the company planned a ground magnetic survey to test for dikes within the limestone body and a drilling program of 3000 metres.

***Port Alberni***

SYMC Resources Ltd has a number of exploration projects in the Port Alberni area including Dauntless, Macktush, MC and Cameron Valley. An airborne geophysical survey of 1661 line km (magnetic, radiometric and electromagnetic) was completed over a large part of its holdings on the west side of Alberni Inlet that include the Dauntless, Macktush and MC properties and eleven documented MINFILE occurrences.

On its **Dauntless** project SYMC also completed trenching and 1062 metres of drilling in 15 holes on three copper-silver-gold targets - the Dauntless North vein (MINFILE 092F 168) and Herb Jr. vein and Tasha zone. Nine of the 15 holes drilled on the Dauntless North vein further defined the vein structure as eight sub-parallel 0.3 to 1.7 metre thick quartz-calcite-chalcopyrite-pyrite-bornite-bearing veins that appear to locally merge into veins up to 5 metres thick. Results of the 2005 Dauntless drilling do not match the spectacular 20+ percent copper grades reported with historical surface sampling of the Dauntless North structure. However, drilling on all three targets areas yielded some encouraging intercepts. The company anticipates completing a revised mineral resource estimate for the Dauntless North veins and an assessment for further work.

In November SYMC Resources was still in the process of drilling the gold-silver-copper bearing David and Fred veins of the **Macktush** prospect (MINFILE 092F 012). The plan was to test the veins over a strike length of 350 metre with 1500 metres of core drilling in about 20 holes. SYMC Resources Ltd is planning to complete a GIS compilation and conduct prospecting, mapping and drilling on its Cameron Valley project (includes MINFILE 092F 143) located on the east side of Alberni Inlet in 2006 (Figure 6.12). The company is also planning to follow-up the 2005 airborne geophysical survey over the Macktush, Dauntless and MC properties with targeted prospecting, mapping, trenching and drilling.

SYMC Resources Ltd is planning to complete a GIS compilation and conduct prospecting, mapping and drilling on its **Cameron Valley** project (includes MINFILE 092F 143) located on the east side of Alberni Inlet in 2006. The company is also planning to follow-up the 2005 airborne geophysical survey over the Macktush, Dauntless and MC properties with targeted prospecting, mapping, trenching and drilling (Figure 6.11).

Figure 6.11. One of four summer fieldtrips arranged by the Vancouver Island Exploration (VIX) Group was at the Port Alberni area Dauntless and Macktush properties of SYMC Resources Ltd.

Bitterroot Resources Ltd optioned from Mike Becherer, the **Mineral Creek** property that includes the Debbie and 900 gold prospects (MINFILE 092F 079 and 331 respectively) located about 10 km southeast of Port Alberni. Westmin Resources Ltd explored the property between 1985 and 1991 with over 50 000 metres of drilling and approximately 2 km of underground workings

to test high grade gold-bearing quartz veins, stockworks and siliceous zones in volcanic rocks.

Four areas along a two kilometer-long trend are targeted for the Mineral Creek project over several years; from east to west the areas are: the Mineral Creek and Linda zones that comprise the 'Debbie' MINFILE occurrence, the '900' MINFILE occurrence, and the 1050 zone that was tested and discovered with one drillhole in 1990 with an intersection of 286.9 g/t gold over 1.7 metres.

2005 exploration was to consist of a surface drilling program of 2000 metres in 15 holes primarily on the 1050 zone located about 800 metres west of the 900 zone. As of late November the company had completed 1270 metres of drilling in 12 holes. 1050 zone results this year include 244.0 g/t gold and 92.0 g/t silver over 0.8 metres, and in a hole located 130 metres distant, 34.12 g/t gold and 6.79 g/t silver over 5.3 metres including 402.0 g/t gold and 85.0 g/t silver over 0.4 metres.

The company also has plans to evaluate the known Linda and 900 zones from underground workings with recently acquired permits. Contractors will rehabilitate the 900 zone underground workings in December to facilitate underground mapping, sampling and drilling.

***Port Renfrew***

Emerald Fields Resource Corp continued with exploration on its **Pearson** project in the Port Renfrew area southwestern Vancouver Island in search for nickel and copper and platinum group elements. The project is focusing on areas underlain by mafic intrusive rocks and on two skarn occurrences, Bugaboo (MINFILE 092C 022) and Reko (MINFILE 092C 091) located 14 km northwest and 14 km northeast respectively of Port Renfrew. Both of the areas were tested with airborne geophysical surveys and core drilling in 2005. Four hundred and sixty metres in 3 holes were drilled at Bugaboo and 300 metres in 4 holes at Reko.

***Texada Island / Sunshine Coast***

On its **Dude** copper-molybdenum-gold porphyry project (MINFILE 092F 276) on Texada Island, Pathfinder Resources Ltd conducted 1270 metres of reverse circulation drilling in 6 holes on portions of a one km diameter area with anomalous copper-molybdenum soil geochemistry and an IP geophysics chargeability anomaly. Surface surveys completed by Pathfinder earlier this year confirmed previous anomalous soil geochemistry results and also demonstrated the presence of gold in the mineralized system. Drilling results released in mid-December indicated the presence of a low-grade copper system with anomalous molybdenum values and the company announced that no further exploration was planned on the property.

Goldrush Resources Ltd completed a drilling program on its **OK Copper-molybdenum** project located approximately 40 km north of Powell River. Goldrush has optioned the property from Eastfield Resources Ltd. Nine hundred and sixty-eight metres of core drilling in 6 holes was completed in 2005 as follow-up to a 2004 airborne geophysical survey and a 2005 estimate on the North Lake zone of an inferred mineral resource of 64.02 million tonnes grading 0.34% copper and 0.016% MoS2 at a 0.20% copper cut-off grade (MINFILE 092K 008). Mineralization occurs in sheeted veins, some stockwork veins and as disseminations hosted in a multi-phase intrusive complex younger than the Coast Plutonic Complex country rock.

This year, 5 of 6 holes were drilled to explore the bounds of the North Lake zone and one hole was drilled on a lesser tested area known as the Claim Lake area where good copper-molybdenum values were encountered with previous drilling. At North Lake, the 5 holes confirmed that mineralization is open in several directions with highlight values that include: 0.30% copper and 0.004% molybdenum (0.007% MoS2) over 33.1 metres; 0.22% copper and 0.013% molybdenum (0.022% MoS2) over 83.3 metres; and 0.27% copper and 0.001% molybdenum (0.002% MoS2) over 39.0 metres. In the Claim Lake area, the single drillhole returned values of 0.15% copper and 0.002% molybdenum (0.003% MoS2) over 96.9 metres.

The well-known clay resource at **Lang Bay** (MINFILE 092F 137) was assessed by Electra Gold Ltd as a source of alumina-silica for cement manufacturing. Previous evaluations of the clay as high brightness filler have not led to production. The company is considering use of an existing barge load out facility near the Powell River pulp mill.

The **Sechelt Carbonate** (MINFILE 092GNW031) project of Pan Pacific Aggregates Ltd entered the pre-application stage of the Environmental Assessment process in November of this year. Located on the Sunshine Coast 15 km north of the community of Sechelt, it is a proposed limestone / dolomite development. Immediate-term products include chemical-grade and cement limestone.

The company reports an inferred resource of more than 100 million tonnes.

The 2005 exploration program at Sechelt Carbonate consisted of road work, geological mapping, ground-based geophysics, trenching and drilling of 5000 to 6000 metres in 30 holes. Pan Pacific plans to complete additional geological mapping and airborne geophysics early in the new year followed by a second round of drilling in the spring to further assess the resource. A resource estimate is planned for completion later in 2006.

The Mineral Hill limestone-garnetite-wollastonite deposit (MINFILE 092GNW054) is located about 10 km south of the Sechelt Carbonate project area. A small amount of wollastonite was quarried in 1990. During 2005, Pan Pacific gained control of the Mineral Hill property and completed clean-up of the site and drilled two holes to further test the extent of the garnetite-wollastonite. The company is also undertaking

environmental studies and working on a development plan for Mineral Hill separate from the Sechelt Carbonate project. Geological mapping, airborne geophysics and drilling is also planned for Mineral Hill in 2006.

On its **Big Andy** project, Kodiak Explorations Ltd completed prospecting and rock sampling on a known gold-silver-copper vein occurrence (MINFILE 092K 122).

***Pemberton***

Near Pemberton, TTM Resources Inc is following-up on work conducted last year on known occurrences (MINFILE 092JW 007, 017 and 018) and on newly identified mineralization as part of its **Molygold** project. A drilling program of 1500 metres is scheduled to begin in December 2005 on the Breccia, Camp and Road zones that were assessed in 2004 with surface surveys. Porphyry molybdenum-copper deposit and base/precious metal-bearing vein deposit models were used in the 2004 work.

Also near Pemberton, fifty km north of the town, Goldstar Mining prospected and completed geological and geochemical surveys on the **Goldking** lead-zinc-silver skarn occurrence (MINFILE 092JNE054). The company is to become publicly traded and plans to raise funds for further work.

***Boston Bar / Harrison Lake / Hope***

Southern Rio Resources Ltd acquired the **Ebb** Cu-Mo prospect (MINFILE 092HNW049) located 20 km southeast of Boston Bar and completed a preliminary assessment with a geochemical survey and small IP program. Strong copper and molybdenum soil geochemical anomalies have been identified with previous surveys, but were not reflected in the tenor of mineralization or rock geochemistry samples collected in 2005. Results of the 2005 IP program and any follow-up drilling next year in 2006 might provide some answers to the soil geochemistry values.

Megastar Development Corp acquired the **Monument** prospect (MINFILE 092HNW054) located within the Coquihalla Gold Belt and about 8 km northeast of Yale. Drilling completed on the mesothermal quartz-gold vein in the late 1970s retuned significant intersections including 15.4 g/t gold over 3.1 metres. The company completed an initial assessment of the property in 2005 and plans a drilling program to test the prospect.

East of Harrison Lake, magmatic nickel +/-copper +/-cobalt +/-PGE deposits continue to be of interest in a belt of sulphide-bearing ultramafic rocks that are host to the former producing Pacific Nickel mine. The mine recorded production of 3.23 tonnes of nickel and 1.43 tonnes of copper between 1958 and 1974 from the Giant Mascot (MINFILE 092HSW125), Pride of Emory (092HSW004) and Star of Emory (092HSW093) deposits. In addition to nickel and copper there are references made in the literature about the presence of cobalt, palladium and platinum in some ore.

As a joint venture, International Millenium Mining Corp and Sutcliffe Resources Ltd have assembled 43 000 hectares of tenure as its **Harrison Lake Regional** project stretching 30 km northwesterly from the Pacific Nickel mine tenure. In late 2004, 1452 line km of an airborne time domain electromagnetic and magnetic survey were completed over the project area. Fifteen potential target areas were identified with the airborne geophysical survey. The Joint Venture followed up in August 2005 with 24 km of ground UTEM geophysical survey over four of the 15 airborne anomalies to help define drill targets. It has selected one of the four anomalies, 4.3 km long and located in the northwestern part of the property, to conduct a 10 hole, 1500 metre core drilling program in either late 2005 or in 2006. Favourable geology of the target area extends into the Katt / sable project area of Pacific Coast Nickel Corp.

Pacific Coast Nickel Corp is searching for nickel-copper and platinum group element bearing deposits east of Harrison Lake with two projects - its Big Nic / Emery Creek project and Katt / Sable project. At the **Big Nic / Emory Creek** project located several km north of the Pacific Nickel mine and east of the Harrison Lake regional Joint Venture project, the company completed 72.5 line km of airborne magnetic and electromagnetic survey over the Big Nic area and 465 line km of the same over the Emery Creek target area - geological and stream sediment geochemistry surveys were conducted over both areas. The **Katt / Sable** project area extends northwest from the northern end of the Harrison Lake Regional project area and includes the Sable occurrence (MINFILE 092HNW077). The company completed 181 line km and 79 line km of airborne magnetic and electromagnetic survey over the Katt and Sable target areas respectively. Geological mapping and rock sampling was conducted over both Katt and Sable. Pacific Coast will be reviewing results of all four targets areas with the intent of identifying drill targets and testing them in 2006.

Also east of Harrison Lake and 24 km southwest of Boston Bar, Saturn Minerals Inc's **Gem Moly** project targeted the known Gem molybdenum-copper prospect (MINFILE 092HNW001). Twenty drillholes totaling 4402 metres were the basis of a historical resource estimate of 15.8 M tonnes grading 0.125% $MoS_2$ using a 0.10% $MoS_2$ cutoff. The deposit occurs within a breccia pipe approximately 400 metres in diameter. The company completed a first round of surface geological and geochemical surveys in the summer of 2005 and expected to complete a second phase later in the year.

Located 130 km east of Vancouver and just 5 km northeast of the Village of Harrison Hotsprings, is the **Abo** project of Eagle Plains Resources Ltd and option partner Northern Continental Resources Inc. The property has been subject to a significant amount of exploration work since 1975 including geological mapping, soil geochemistry, ground geophysics, 444 metres of

underground development and 16 924 metres of drilling including 3068 metres in 2005.

The property is underlain by marine sedimentary and volcanic rocks of the Lower Cretaceous Gambier Group intruded by Oligocene to Miocene quartz diorite stocks. Mineralization consists of gold-silver bearing quartz veins associated with and predominantly confined within several of the quartz diorite stocks (Jenner, Portal, Lake and Hill Stocks) and a gold-silver-zinc and copper / sulphide bearing breccia pipe (Breccia zone) located adjacent to the Hill Stock.

The gold-silver bearing vein systems of the Jenner zone and nearby Portal zone comprise the main deposits on the property. Northern Continental Resources Inc released in 2003 a NI 43-101 compliant resource estimate that outlines an indicated resource of 1.845 million tonnes grading 2.79 g/t gold and an inferred resource of 0.6 million tonnes grading 2.8 g/t gold in the Jenner and Portal zones.

Historical results from other zones have included: up to 2.24 g/t gold in the Lake Stock zone; up to 23 g/t gold and 57 g/t silver over 1 metre in the Hill Stock zone; and 29 metres averaging 1.65 g/t gold, 4.4 g/t silver, 0.56% zinc and 0.04% copper in the Breccia zone.

The company completed a 2468 metre, 10 hole program in early 2005. Two holes were drilled at the Portal stock, 1 hole was drilled at the Lake Stock, 5 holes tested the Hill Stock and surrounding area, one tested the breccia pipe and one drillhole was completed at the Slide Stock area.

Results of the 2005 program included discovery of a new mineralized zone along the north-western border of the Hill Stock with highlight values of: 5.0 m @2.7 g/t gold, 1.0 m @ 60.9 g/t gold and 5.0 m @ 6.8 g/t gold. Eagle Plains Resources Ltd and Northern Continental Resources Ltd completed 600 m of additional drilling on the new NW Hill Stock zone in November / December with results yet to be released.

On the west side of Harrison Lake, Carat Exploration Inc worked its **Seneca** project (MINFILE 092HSW013, 039 and 165) to test known polymetallic occurrences and the surrounding area. The company completed a first stage program of 325 line km of airborne electromagnetic geophysics followed by prospecting, geology, stream sediment surveys and 25 line km of ground-based electromagnetic and IP geophysics. Stream sediment geochemistry indicates that potential exists for the discovery of zinc-copper-lead-gold-silver mineralization beyond the currently known mineral occurrences in multiple horizons in the volcanic stratigraphy (Figure 6.12).

The company expanded the size of the property based on stage one results and was mobilizing a core drilling program of 3700 metres in the first week of December to test known zones and stage one anomalies. Drilling will continue into January.

Figure 6.12. Looking north towards the Fleetwood and 33 zones (between cut blocks) of the Seneca project of Carat Exploration Inc.

Another VMS project on the west side of Harrison Lake is the **Thor-Odin** project of Argentor Resources. The company completed geological mapping, an induced polarization geophysical survey and collected soil samples on 20 km of grid on two documented occurrences of zinc-copper-lead-silver-gold mineralization (MINFILE 092HSW140, 164).

North Pacific Alloys Limited, a subsidiary of Leader Mining International Inc continued with its development plans for its **Cogburn** magnesium deposit (MINFILE 092HSW081) located approximately 120 km east of Vancouver on the east side of Harrison lake and 23 km northeast of Hope. The company secured road access to the area and as of March 2005, has been in the pre-application stage of BC environmental assessment. North Pacific announced in late November 2005 that it was looking for a company to be operator or owner of the project.

In 2005 Century Mining Corporation completed rehabilitation / reclamation work at the **Carolin** gold mine (MINFILE 092HNW007) located northeast of Hope. The company has also planned to undertake exploration at the site and update an earlier feasibility study, but as of late November the work had yet to begin.

Aries Resource Corporation completed a small ground-based magnetic survey on its **Mara** property

(MINFILE 092HNW029) located immediately southeast of Boston Bar. The occurrence is documented as a magmatic nickel-copper-silver showing hosted in ultramafic rocks.

## OUTLOOK FOR 2006

Mining activity is anticipated to be strong again in 2006 with continuing production at Myra Falls, Quinsam Coal and the many industrial mineral and aggregate quarries and pits.

The coming mineral exploration season should be another active and successful one. Exploration / development projects that are expected to continue into next year include:

- Underground development and drilling at the **Myra Falls** zinc-copper-gold-silver mine
- Drilling at the **Quinsam Coal** mine
- Compliance Energy Corp will complete bulk sampling at the **Bear Coal** project and exploration at its nearby **Fox Coal** deposit
- SYMC Resources Ltd will be continuing its **Macktush** project with an ongoing drill program on the gold-silver-copper bearing David and Fred veins, and will be initiating work on its **Cameron Valley** project located on the east side of Alberni Inlet. The company is also planning to follow-up the 2005 airborne geophysical survey over the Macktush, Dauntless and MC properties with targeted prospecting, mapping, trenching and drilling
- Bitterroot Resources Ltd's **Mineral Creek** project will test for high-grade gold in the 1050, 900 and Linda zones
- With a late start in 2005, Carat Exploration Inc will continue drilling at its **Seneca** project in January
- With the **Sechelt Carbonate** project, Pan Pacific Aggregates Ltd has plans to continue in 2006 with additional geological mapping, airborne geophysics and drilling to test the carbonate resources. It also plans work at the Mineral Hill limestone-garnetite-wollastonite occurrence located about 10 km south
- It is expected that Sechelt Industrials Mineral Corp will bulk sample its **Jeune Landing** dolomite prospect near Port Alice
- With a planned December mobilization of a drill rig on its **Molygold** project near Pemberton, it is expected that TTM Resources Inc will be drilling in the new year
- In the search for nickel +/-copper +/-cobalt +/-PGE deposits east of Harrison Lake, drilling is likely to be completed on the **Harrison Lake Regional** Joint Venture project of International Millenium Mining Corp and Sutcliffe Resources Ltd, and might be completed on the **Big Nic/Emory Creek** project and **Katt/Sable** projects of Pacific Coast Nickel Corp

There are a number of projects started in 2006 for which results are not yet available or released. Some of the higher profile projects that might continue into next year, contingent upon results, include:

- The **Merry Widow** project of Grande Portage Resources Ltd contingent on results of an IP survey
- Doublestar Resources Ltd's **Century Limestone** project after completion of a ground-based magnetic survey and core drilling to test the continuity of the limestone body.

## ACKNOWLEDGEMENTS

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# NORTHEAST REGION

**By Bob Lane, PGeo**
Regional Geologist, Prince George

## SUMMARY AND TRENDS

Exploration and mining in the Northeast region was highlighted by the approval and construction of two coal mines, the Trend Small Mine and Wolverine Mine, and a surge in exploration to a level not witnessed since the 1970s and 1980s. Interest in the region was centered squarely on the Peace River coalfield. The coalfield lies within the Rocky Mountain Foothills and trends northwest from the Alberta border to the Peace Reach. Coal measures of principal economic importance are contained within Lower Cretaceous strata of the Gates and Gething formations. The Gates Formation is known for its medium to high-volatile bituminous coals, suitable for producing coke used in the steel-making industry. The underlying Gething Formation hosts both low-volatile, high-rank bituminous coal (in demand as a Pulverized Coal Injection (PCI) coal product utilized as a replacement for coke in the steel-making process), and medium to high-volatile bituminous coking coals. Outside of the coalfield there were relatively few exploration programs. Of note, however, was an early stage reconnaissance-style program in search of iron oxide-copper gold deposits in the Muskwa Ranges west of Fort Nelson.

An estimated $27.1 million was spent on exploration in the region during the year. This total represents more than a seven-fold increase over the $3.6 million spent in 2004. The amount of exploration drilling totaled approximately 94 000 metres, more than seven times the amount drilled last year (*c.f.* 13 000 metres). A total of 162 coal licenses were issued to or applied for by industry during the first eleven months of 2005. These licenses cover 129 023 hectares and represent a more than three-fold increase over the area claimed in calendar 2004 (*c.f.* 81 licenses covering 36,048 hectares). Unseasonably wet weather throughout the summer and fall led to the temporary suspension of activity at several properties. As a result of the delays, a number of projects operated well into December.

There were sixteen major exploration programs in the region (*c.f.* five in 2004), most of which had expenditures exceeding one million dollars. In general, the larger programs included deposit appraisal drilling in order to establish reserves and resources that are compliant with National Instrument 43-101 reporting standards. Aggressive mine planning, including pre-feasibility and feasibility studies and base line environmental data collection and analysis, was conducted on the Burnt River, Five Cabin, Lossan, Trend and Wolverine properties. The location of significant exploration projects, and smaller exploration projects believed to have regional significance, are shown on Figure 7.1.

The development of new coal mines in the Peace River coalfield continued in earnest during 2005. Construction of the Trend Small Mine of NEMI Northern Energy & Mining Inc was nearing completion at year's end and is expected to reach production in January, 2006. Construction of the Wolverine mine of Western Canadian Coal Corp progressed rapidly through the year and will likely be complete by the third quarter of 2006. The Willow Creek PCI coal mine of Pine Valley Mining Corporation, which opened in July, 2004, and the Dillon PCI coal mine of Western Canadian Coal Corp, which began operations in December, 2004, are the regions two operating mines. An estimate for 2005 coal production from the two mines is listed in Table 7.1.

The two former producers in the coalfield were Quintette and Bullmoose. The two operations produced coking coal for export markets. The Quintette mine operated from 1983 to 2000 producing 68.1 million tonnes of coal. The Bullmoose mine operated from 1983 to 2003 and produced approximately 34.1 million tonnes of coal. Combined production from Quintette and Bullmoose from 1984 to 1999, a period when the mines were operating at or near capacity, averaged 5.9 million tonnes of clean coal per annum. This annual clean coal production figure may be eclipsed in 2007 when the regions new mines are operating at or near capacity.

The robust international coal markets maintained much of their strength during the year. By the end of the year contract prices for coking coal were in the US$125/tonne range while contract prices for PCI coal softened somewhat as supply began to match demand and settled into the US$60-80/tonne range.

## COAL MINES

### *Willow Creek*

The **Willow Creek** mine (MINFILE 093O 008) is situated south of the Pine River approximately 45 kilometres west of Chetwynd. It is operated by Falls Mountain Coal Inc, a 100%-owned subsidiary of Pine Valley Mining Corporation. The 900 000 tonnes per year operation started up in July, 2004, and was the first coal

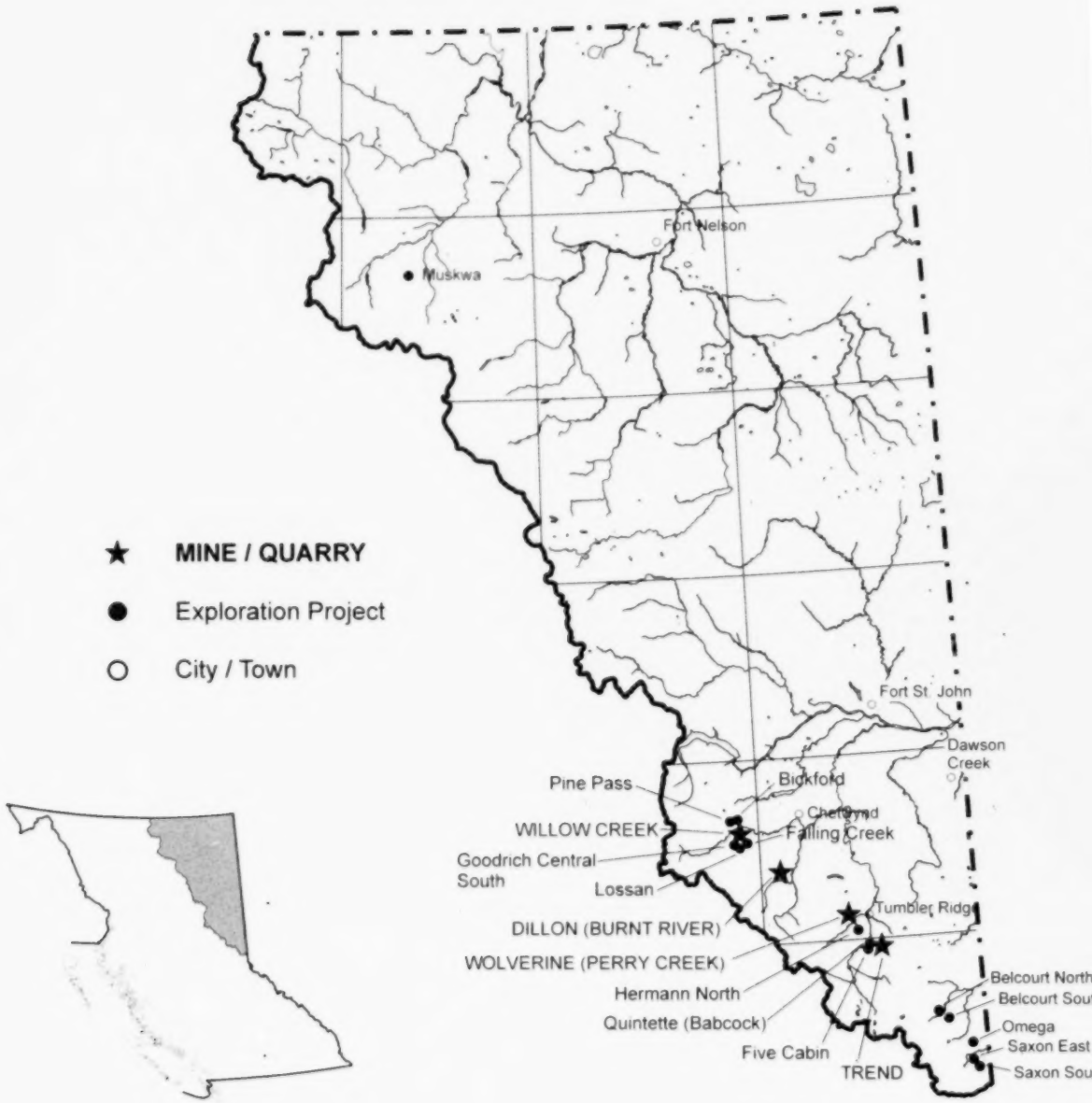


Figure 7.1. Operating mines and major exploration projects, Northeast Region, 2005.

**TABLE 7.1. FORECAST MINE PRODUCTION, NORTHEAST REGION, 2005**

| Mine | Operator | Deposit Type / Commodity | Forecast Production in 2005 (tonnes or kilograms) | Number of Employees | Proven and Probable Reserves (on Jan. 1, 2005) |
|---|---|---|---|---|---|
| **Coal** | | | | | |
| Dillon | Western Canadian Coal Corp | Pulverized Coal Injection (PCI) coal | 715 000 t | 86 | 1 370 000 t |
| Willow Creek | Falls Mountain Coal Inc (Pine Valley Mining Corporation) | Pulverized Coal Injection (PCI) coal | 750 000 t | ~60 | 12 300 000 t saleable |

mine to open in the northeast since the Quintette and Bullmoose mines (now closed) began production in 1983.

The coal measures at Willow Creek occur in the Gething Formation on the east limb of the Peace River anticline. Test results showed that coal from seams 6 and 7 is a low-volatile bituminous, high-rank coal. It is sold into the PCI coal market. Several seams up section, namely seams 1 to 4, have coking coal characteristics and will demand higher prices as coke blends. The measured and indicated recoverable reserve for the Willow Creek deposit at the start of mining was 12.3 million tonnes.

In February, 2005, the company completed construction of its permanent crusher, radial stacker, coal load-out facility and rail siding (Figure 7.2). Construction of a 450 tonne per hour coal wash plant was completed in October, and commissioned in November. During the year reserves in the Peninsula pit were mined out and development of the adjacent Central pit was initiated. Clean coal production for the 2005 calendar year is expected to approach 750 000 tonnes. The current total mine workforce is approximately 60. Pine Valley Coal has applied for an amendment to its *Mines Act* permit that, when approved, will allow production of up to 2.2 million tonnes of clean coal per annum.

Figure 7.2. Willow Creek plant site and load-out facility.

### *Dillon Mine*

The **Dillon** PCI coal mine (Figure 7.3) of Western Canadian Coal Corp, part of the **Burnt River** property (MINFILE 093P 007-008), is situated about 55 kilometres by road southwest of Chetwynd. The project received a *Mines Act* permit in September, 2004, and production was achieved in early December, 2004. The raw PCI coal product is trucked 94 kilometres southward to the Bullmoose load-out facility where it is loaded into railcars bound for Ridley Terminals in Prince Rupert. In July 2005, Western Canadian Coal received an amendment to its *Mines Act* permit for an increase in monthly production that accelerated annual production to almost one million tonnes per year. The rate increase, coupled with a revision in the mineable reserve from 1.56 million tonnes to 1.37 million tonnes, will reduce the mine life of the Dillon pit to about two years (c.f. 6.5 years). Clean coal production for the 2005 calendar year is expected to exceed 700 000 tonnes. The Dillon mine employs about 50 mine workers. An additional 30 to 35 workers operate the fleet of coal haul trucks, run the coal load-out and staff the office in Tumbler Ridge.

Figure 7.3. Coal extraction from both limbs of the syncline at the Dillon mine.

The Burnt River property is underlain by folded coal-bearing stratigraphy of the Gething Formation. Three main coal seams identified on the property are the Lower Seam, Upper Seam and Seam 60. The low-volatile, high-rank coal measures are preserved within two northwest trending synclines. The Dillon syncline contains the Dillon deposit. The Upper Seam and Lower Seam are found in the Dillon deposit and have a combined true thickness of more than 8 metres. The adjacent and much larger Owl syncline contains the Brule deposit (MINFILE

093P 007) where all three seams are present and have a cumulative thickness of about 12.2 metres. The total measured in-situ coal resource for the Brule deposit is 36.2 million tonnes. The small Blind deposit, immediately north of the Dillon deposit, lies on the southwest limb of the Blind Creek syncline and contains a total inferred in-situ coal resource of 2.36 million tonnes.

## MINE DEVELOPMENT PROJECTS

### *Trend*

The **Trend** Small Mine (or TSM; MINFILE 093I 010) will become British Columbia's next coal mine (Figure 7.4) when it is commissioned in the first quarter of 2006. NEMI Northern Energy & Mining Inc is developing the coking coal mine and plans to be in production by January, 2006. Trend is the second coal mine to be permitted under the province's sub-Environmental Assessment process that engages a regional Mine Development Review Committee to conduct a critical review of a mine proposal prior to issuing permits and approvals.

Figure 7.4. Coal processing plant under construction at the Trend Small Mine (photograph courtesy of Kevin Sharman, NEMI).

The Trend property is located about 25 kilometres south of Tumbler Ridge and approximately 12 kilometres south of the dormant Quintette coal mine. It is comprised of five 'blocks' that cover coal-bearing stratigraphy of the Gates and Gething formations on the northeastern flank of Roman and Quintette mountains. The South and Extension blocks contain a Proven and Probable Reserve of 21.2 million run-of-mine (ROM) tonnes of medium-volatile bituminous coal. The other blocks are Roman Mountain, Hambler and Q-West. Each block covers a 2 to 5 kilometre strike length of coal-bearing stratigraphy. The coal reserves of interest are contained in five seams (D, E, F, G/I and J) in the Gates Formation. These five seams have a cumulative thickness of more than 15 metres in the South block.

The mine development is taking place on the South block of the property and will exploit a saleable coal reserve of 1.68 million tonnes from a narrow, trough-shaped pit measuring about 2500 metres long.

Timber harvesting and clearing of the pit, plant site and rail loop areas was completed in August. Stripping of waste rock from the pit area began late in the year. A limited tonnage of coal was mined and transported to the plant site for processing. Construction of the coal processing plant is expected to be complete in January, 2006. Production is targeted at up to 60 000 tonnes of clean coal per month (to a maximum of 240 000 tonnes per annum) during a 4-month mining campaign. The coal processing plant has been designed to produce between 1.2 million to 1.8 million tonnes of clean coal per annum and will enable NEMI to expand its mining operation. The projected capital cost of the mine development is CAD$45 million.

Construction of a 2.2-kilometre rail loop and coal load-out facility, located just off the Heritage Highway, a haul distance of 25 kilometers north from the mine, was completed in November. Mine development also included the re-installation of steel rails on a 16-kilometre section of the Tumbler Ridge Branch Line that had been removed following the closure of the Quintette mine. Coal will be railed to the Ridley Island terminal near Prince Rupert for export to foreign markets.

NEMI completed a feasibility study on its Trend Full Mine (TFM) project and plans to make application for this 1.2 to 1.8 million tonne per annum mine development to the Environmental Assessment Office early in 2006. Conceptual mine planning has identified a narrow, 8 kilometre long pit that would be developed in several phases and extract coal from both the upper Gates and lower Gething formations. The project would effectively engulf the Trend Small Mine and would benefit from some of the recently built infrastructure. The TFM has a projected capital cost of CAD$61 million and, based only on the reserves established for the South and Extension blocks, a mine life of at least 10 years.

### *Wolverine*

Western Canadian Coal Corp received its Environmental Assessment Certificate for the development of the **Wolverine** metallurgical coal mine (Figure 7.5) in January, 2005. The project received its *Mines Act* permit in March and ground breaking and construction began in earnest in early April. The project is located in the Wolverine Valley about 25 km northwest of Tumbler Ridge and is strategically positioned adjacent to CN Rail's Tumbler Ridge Branch Line. The approved mine plan includes the development of the **Perry Creek** deposit (MINFILE 093P 025).

Figure 7.5. Western Canadian Coal Corp Vice-President/COO John Hogg and Senior Mine Engineer Gary Gould looking southward over construction taking place on the Wolverine mine-site.

In November, 2005, the company updated the Proven Reserve figure for the Perry Creek deposit to 22.8 million tonnes of clean coal with strip ratio of 8.7. The Probable Reserve for the nearby EB deposit, not yet permitted for development, is 4.9 million tonnes with a strip ratio of 8.4. The approved rate of production is 1.6 million tonnes of clean metallurgical coal per annum; however, the company has applied for an amendment that will permit an increase to 2.4 million tonnes per annum. The capital cost of the project is expected to exceed US$240 million. Production is anticipated to commence in the second or third quarter of 2007. The mine will employ approximately 250 workers.

The coal measures of interest occur within the Gates Formation in a gently southeast plunging open syncline. Four seams (E, F, G and J seams) have a maximum cumulative thickness of up to 15 metres. The coal measures have a rank of medium-volatile bituminous and are classified premium coking coals. During the year, the company excavated two small pits within the proposed Perry Creek pit in order to produce bulk samples from each seam for coal quality testing.

***Brule***

Western Canadian Coal continued with its baseline environmental monitoring program and pre-feasibility work on Brule throughout 2005. In December the company submitted its application for an Environmental Assessment Certificate for development of the deposit to the Environmental Assessment Office. The formal 180-day review period began on December 10, 2005. Brule is expected to reach production before reserves at Dillon are exhausted.

The Brule mine proposal includes the development of the large Brule deposit and much smaller Blind deposit. Mining will utilize conventional truck and shovel open pit mining methods with coarse coal crushing and screening and a coarse coal washery. The capital cost of the project is estimated to be US$200 million. Over the projected 11 year mine-life of the operation a total of 20.7 million tonnes of clean coal will be produced from the Brule pit and 1.1 tonnes of clean coal will be produced from the Blind pit. The rate of production is targeted at 2.0 million tonnes of PCI coal per year. The project will create 300 to 360 direct mining jobs and an additional 40 – 60 coal haul jobs as well as another 6 at the coal load-out. Some of the infrastructure that services Dillon will also support the Brule operation. However, the Brule project will require the construction of a 60-kilometre haul road northward from the mine-site to a new rail loop and coal load-out facility in the Falling Creek Flats area south of the Pine River and west of the Willow Creek mine. Erection of a 69 kV powerline will also be required (from either the Duke Energy plant or the Sukunka substation).

## COAL EXPLORATION PROJECTS

There were fifteen major coal exploration projects in the region in 2005 (Figure 7.1 and Table 7.2). A brief description of each project follows.

The **Five Cabin** property was one of eleven northeast British Columbia coal properties acquired by Hillsborough Resources Limited in 2005 from David Fawcett. It is part of the Murray River Group of coal licenses centered 15 kilometres southwest of the dormant Quintette mine. Following the acquisition, Hillsborough embarked on an aggressive air rotary and diamond drilling program focusing on the Horizon, Barbour and Ridge areas of the Five Cabin property.

The main geological structure on the property is the Five Cabin syncline. In the Horizon area, the coal-bearing Gates and Gething formations are folded into a northwest-trending asymmetrical syncline with gently dipping limbs. Previous work on the Five Cabin structure was conducted by Denison Mines and

Crowsnest Resources in the 1970s and 1980s respectively.

Hillsborough plans to develop two small open pits on Horizon to extract bulk samples from the 1 Seam near the base of the Gates Formation and from the B-2 Seam in the upper Gething Formation. The coal will be test marketed and subjected to a range of coal quality tests. In October, 2005, Hillsborough signed a letter of intent with Anglo Coal, a division of Anglo American plc., that may lead to Anglo's participation in the Five Cabin project.

Information from the 2005 program will enable the company to calculate a NI 43-101 compliant resource for the Horizon area of the Five Cabin property. Collection of base line environmental data also began in the summer and will continue beyond 2005. The company expects to complete mine design and feasibility studies through the winter. This information will form part of the company's application for an Environmental Assessment Certificate for a 1.2 to 1.6 million tonne per year mine.

Hillsborough also drilled the **Bickford** PCI coal prospect located north of the Pine River and east of Fisher Creek, about 50 kilometres west of Chetwynd.

On the west side of Fisher Creek, Pine Valley Coal completed a major rotary drilling program on its **Pine Pass** (MINFILE 093O 007) property. The program was designed to expand the property's reserve base from its current level of 9.5 million tonnes (NI 43-101 compliant) that was established in 2003. The Fisher Creek syncline brings coal-bearing strata of the Gething Formation to surface. The formation contains nine seams of significance. Approximately 65% are considered to be suitable for use as coking coal with the remainder classified as PCI coal. In the 1980s Gulf Canada Resources reported unclassified resources for the nearby **Crassier Creek** (57.3 million tonnes) and **Fisher Creek** (21.3 million tonnes) deposits now owned by Pine Valley Coal. Each property has the potential to host an economic deposit that could supplement

**TABLE 7.2. MAJOR EXPLORATION PROJECTS, NORTHEAST REGION, 2005**

| Property | Operator | Minfile (NTS) | Commodity | Deposit Type | Work Program |
|---|---|---|---|---|---|
| Belcourt North | Belcourt Saxon Coal Limited Partnership | 093I 014 | Coking Coal | Sedimentary | A; G; RD & DD (~9550m, 42 holes); GP; CQ; PF |
| Belcourt South | Belcourt Saxon Coal Limited Partnership | 093I 014 | Coking Coal | Sedimentary | A; G; RD & DD (4313m, 43 holes); GP; CQ; PF |
| Bickford | Hillsborough Resources Ltd | 093P 005 | Coking and PCI Coal | Sedimentary | A; G; RD & DD (1176m, 14 holes); GP |
| Falling Creek | Kennecott Canada Exploration Ltd | 093O 034-036 | Coking and PCI Coal | Sedimentary | G; RD (2349m; 12 holes); GP; CQ |
| Five Cabin | Hillsborough Resources Ltd | | Coking Coal | Sedimentary | A; G; TR; RD & DD (17 079m, 171 holes); GP; BU; CQ; PF; EN |
| Goodrich South Central | First Coal Corp | 093O 034 | Coking and PCI Coal | Sedimentary | A; G; RD & DD (~10 700m, 65 holes) |
| Hermann North | Western Canadian Coal Corp | | Coking Coal | Sedimentary | A; G; RD & DD (5511m, 29 holes); GP; CQ; PF |
| Lossan | Cline Mining Corporation | 093O 031 | Coking and PCI Coal | Sedimentary | UG-BU (10 t); RD (4281m, 28 holes); GP; CQ; PF; F; EN |
| Muskwa | Twenty Seven Capital Corp | 094K 050 | Cu | IOCG | AB-MG; P; G; GC; DD (420m, 12 holes) |
| Omega | Belcourt Saxon Coal Limited Partnership | 093I 014 | Coking Coal | Sedimentary | G; RD & DD (1986m); GP; CQ |
| Pine Pass | Falls Mountain Coal Inc (Pine Valley Mining Corporation) | 093O 007 | Coking and PCI Coal | Sedimentary | A; G; TR; RD & DD (16 309m, 91 holes); GP; EN |
| Quintette-Babcock Window | Elk Valley Coal Partnership | 093I 011 | Coking Coal | Sedimentary | A; G; RD (12 109m, 58 holes); GP |
| Saxon East | Belcourt Saxon Coal Limited Partnership | 093I 016 | Coking Coal | Sedimentary | G; RD & DD (1986m); GP; CQ |
| Saxon South | Belcourt Saxon Coal Limited Partnership | 093I 016 | Coking Coal | Sedimentary | G; RD & DD (2578m); GP; CQ |
| Trend - Roman Mountain | NEMI Northern Energy & Mining Inc | 093I 030 | Coking Coal | Sedimentary | A; G; RD (~3000m, 23 holes); GP |
| Wolverine - Perry Creek | Western Canadian Coal Corp | 093P 015, 025 | Coking Coal | Sedimentary | OP-BU (20 t); CQ; EN |

**Work program abbreviations:**

A = access; trail, road construction on claims; AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; AB-RD = airborne radiometrics; BU (X tonnes) = bulk sample (weight in tonnes if known); CD = condemnation drilling; CQ = coal quality testing; CT = carbonization test (coal); DD (Xm) = diamond drilling totaling X metres; EN = environmental baseline studies/monitoring, remediation work; FS = feasibility studies; G = geology, mapping, etc; GC = geochemical sampling (rock, soil, silt, etc); GD = geotech drilling; GP = geophysics (general); IP = Induced Polarization; 3D-IP; MG = magnetics; MK = marketing-primarily for industrial mineral products; MS = metallurgical studies; OB = overburden drilling; P = prospecting; PD = percussion drilling; PF = pre-feasibility studies; R = reclamation; RC = reverse circulation drilling; TR = trenching, UG (X m) = X metres of underground development; UG-BU = underground bulk sample; OP-BU = open-pit bulk sample; UT = UTEM; VLF; WT = washability test (coal)

production at the Willow Creek mine.

Kennecott Canada Exploration Inc returned to its **Falling Creek** property that covers the headwaters of Falling, Hasler and Highhat creeks south of the Willow Creek mine. This property forms part of the former Gulf Canada Resources **Goodrich** property (MINFILE 093O 034-036; 093P 024). On the Kennecott tenure multiple coal seams occur near the top of the Lower Cretaceous Gething Formation and are medium to high-volatile bituminous coals suitable for the metallurgical coal market. In 2005, Kennecott used existing access roads to complete four fences of rotary drill holes covering a strike length of approximately 16 kilometres. The company is expected to continue exploring the property in 2006.

Cline Mining Corporation completed 28 rotary holes and extracted a 10-tonne bulk sample from a small underground development on its **Lossan** coal property (Figure 7.6), centered about 15 km southeast of the Willow Creek mine. Coal measures at Lossan occur in the Gething Formation and are brought to surface by the complex Goodrich Synclinorium. Earlier work identified two principal coal seams that average 4 and 8 metres in thickness. Coal is classified as medium to low-volatile bituminous and quality is variable with both coking coal and PCI coal being recognized. The property hosts a measured and indicated resource of 5.94 million tonnes and an inferred resource of an additional 14.16 million tonnes. Cline envisages the development of a 250 000 tonnes per annum operation that would require a wash plant, rail loop and coal load-out facility.

Figure 7.6. BC Ministry of Energy, Mines and Petroleum Resources geologist Dr. Barry Ryan (right) discussing geology of Lossan coal deposit at bulk sample adit.

Immediately to the north on the **Goodrich South-Central** property, First Coal Corp, a private company formed in 2005, completed a major rotary and diamond drilling project. The project area was part of the Gulf Canada Resources Goodrich property in the 1970s, but received little exploration at the time. Subsequently, Goodrich South-Central is considered to be a 'greenfields' project. The property is underlain by coal-bearing Gething Formation. Construction of roads used to provide access to drill stations resulted in the exposure of several steeply dipping coal seams.

Western Canadian Coal completed a major exploration drilling program on its **Hermann North** property, located south of the Wolverine River, about 5 km southeast of the Perry Creek deposit. Interestingly, the coal seams extend under the inactive Quintette conveyor assembly that at one time fed run-of-mine coal from the Wolverine and Mesa pits to the processing plant. The program at Hermann North provided data that the company will use to revise the deposit's current Measured and Indicated Resource of 43.2 million tonnes. Coal measures are within the Gates Formation and are expected to have qualities very similar to coal mined at Quintette. If economic, Hermann North would be developed as a satellite deposit to the Wolverine mine.

Exploration on the flank of Babcock Mountain at the **Quintette** mine site took place for the first time in many years. Elk Valley Coal Partnership completed more than 12 000 metres of rotary drilling that targeted the Little Windy and Big Windy pit areas and the undeveloped Window area. The program was designed to prove up additional coal reserves. The company expects to continue with its exploration program in 2006, but does not have any immediate plans to reopen the mine.

In addition to developing the Trend small mine, NEMI conducted a drilling program on the Roman Mountain block of its **Trend** property. A total of 23 rotary holes were drilled and an additional 10 holes, dating from the mid-1970s, were opened and re-logged. The work was aimed at defining the dimensions of a tight northwest trending syncline, that hosts the coal-bearing measures of the Gates Formation, and at increasing the resource base of the property. Presently the Roman Mountain block contains 26.2 million tonnes of coal classified as 'inferred, in-place and of immediate interest'. The Roman Mountain and Hambler blocks offer potential to greatly expand the property's overall resource.

A new entity, the Belcourt Saxon Coal Limited Partnership (BSCLP) was formed by a joint-venture agreement between NEMI and Western Canadian Coal to explore and develop the **Saxon** and **Belcourt** properties. BSCLP managed a major exploration program that covered five discrete metallurgical coal properties between the Redwillow River and the Alberta border in the southeast portion of the coal belt. Each of the five properties, Belcourt North (Red Deer), Belcourt South (Holtslander), Omega, Saxon East and Saxon South were explored in the 1970s and 1980s by Denison Mines and Gulf Canada Resources. Nine potentially economic coal seams were identified in the Gates Formation which has been deformed by northwest-trending folds and southwest verging thrust faults. On

the Belcourt property these seams have an aggregate thickness ranging from 22 to 28 metres. An 'in-situ raw coal resource' of 706 million tonnes was estimated for the Belcourt North and Belcourt South properties in 1982 by Wright Engineers Limited. Regional resource estimates of 179 million tonnes for Saxon South and 265 million tonnes for Saxon East were calculated by Monenco in 1977. At the time Saxon East was being proposed as an underground operation.

In 2005 the two northern properties, Belcourt North (Figure 7.7) and Belcourt South, were assessed by road-based rotary and diamond drilling programs aimed at increasing the confidence level of geological databases. Results from infill and confirmatory drilling will enable BSCLP to upgrade the resources of each property to NI 43-101 compliant "Indicated or better" resource classification. The deposits are narrow and elongate following a northwesterly trend.

Figure 7.7. Rotary drilling on the Belcourt North property.

Exploration on Omega, Saxon East and Saxon South was helicopter-supported as the properties are not currently accessible by roads.

Only five holes had previously been drilled on Omega. The 2005 exploration program added 13 diamond drill and 3 rotary drill-holes to the data set for the property. It is expected that information from these additional drill holes will allow BSCLP to establish a NI 43-101 compliant inferred resource for the property.

The Saxon East property was evaluated with a number of drill holes that were primarily confirmatory in nature. Previous workers focused on seams 1, 2 and 3, each thicker than 3 metres, as potentially economic in an underground mining scenario. Drilling on the Saxon South property, located close to the Alberta border, tested one-third of the historic resource.

A conceptual development plan announced by BSCLP outlines an 8.7 million tonne per year mining operation with a minimum mine life of 20 years. The capital cost for the mega-project was estimated at between $800 million and $1300 million with the onset of mining scheduled for 2009-2010. The resources on the Belcourt properties would be developed initially followed by those on Omega and the Saxon properties. Plans for 2006 include the development of road access to Omega, Saxon East and Saxon South to facilitate more cost effective deposit appraisal exploration programs.

## METAL EXPLORATION PROJECTS

Twenty Seven Capital Corporation initiated its search for iron oxide-copper gold (IOCG) mineralization on the **Muskwa** property. The property is centred 150 kilometres west of Fort Nelson and encompasses approximately 1000 square kilometres of Proterozoic stratigraphy. The area is known for several high-grade copper vein occurrences including the Magnum/Churchill Copper mine that operated from 1970 to 1975 producing 14 673 tonnes of copper, the Davis Keays prospect (containing an historic resource of 1.12 million tonnes grading 3.43% Cu) and the Toro prospect (containing an historic resource of 1.57 million tonnes grading 3.38% Cu). In 2005 the company undertook a largely reconnaissance-style program and discovered the 2-metre thick Matnik high-grade copper vein. It is comprised of chalcocite and lesser bornite in a gangue of quartz-carbonate and hematite. A 1.7-metre chip sample across the vein averaged 41.3% Cu. A subsequent diamond drilling program tested the vein at depth and along strike. Twenty Seven Capital also completed a 9000 line-km aeromagnetic survey. Data from the survey was received late in the year and will be assessed over the winter months to determine priority targets for follow-up in 2006. Preliminary data has outlined a significant magnetic anomaly that coincides with a hematite- and siderite-rich breccia.

Aries Resource Corp optioned tenure that covers the Churchill Copper and Davis Keays properties specifically. They form part of the company's **Trident** project and are expected to be the focus for an aggressive exploration program in 2006.

## OUTLOOK FOR 2006

Coal production in the Northeast region will increase as the Trend Small Mine and Wolverine Mine are brought on stream in early and mid-2006, respectively, and as the Willow Creek and Dillon (Burnt River) mines mature. Coal production for 2006 is estimated to be in the 2.5 to 3.0 million tonne range.

The pace of new mining proposals is predicted to continue. An application for the development of the large Brule deposit was received in early December. An application for development of the Trend Full Mine is expected to reach the province's Environmental Assessment Office in the first quarter of 2006. In addition, an application for the development of one or more deposits on the Five Cabin property is expected to

follow later in the year and an application for development of the Lossan 'small mine' may be submitted to the regional Northeast Mine Development Review Committee. If approved, site clearing and mine construction could proceed on one or more of these projects before years end.

The level of exploration and deposit appraisal activity witnessed in 2005 is expected to remain high, but may decline modestly as several projects advance to the permitting and mine construction phase. Major exploration programs will likely proceed on at least ten properties, including the Belcourt–Saxon group, Falling Creek, Five Cabin, Goodrich South-Central, Quintette-Babcock and Trend.

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